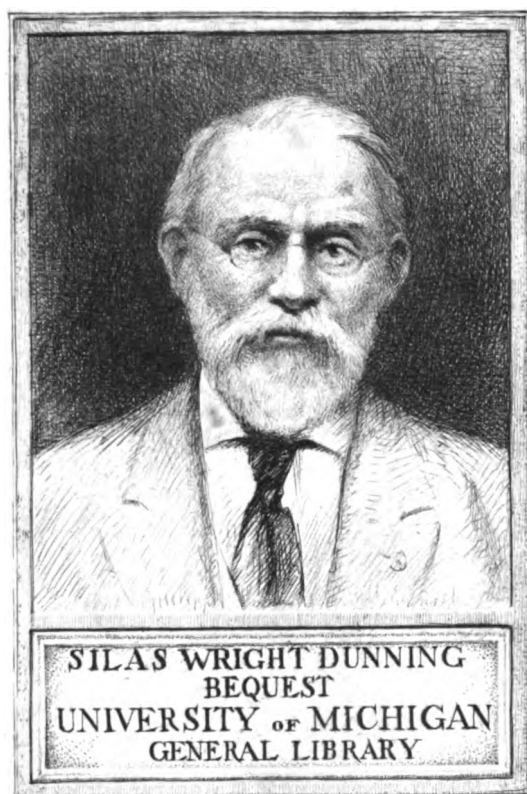

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Secretary.

Simla, 1st August 1907.

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BY LIEUT.-COLONEL THE HON. E. NOEL.

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Each increase on the right was accompanied by a corresponding increase on the left bank, until the area reached its present extent; the perimeter of the walls is now more than five miles. The present walls were built by the Venetians in 1537, after the designs of the architect and military engineer SANMICHELI, who was a native of S. MICHELE outside the walls, already mentioned as the scene of skirmishes in the ARCOLE and RIVOLI campaigns.

On the left bank, where the walls cross the Alpine spur, is the fort of CASTEL SAN FELICE: this is above the old citadel and is the highest point of the *enceinte*. This fort, the citadel and the SCALIGERS' stronghold the CASTEL VECCHIO, are the three "castles" of VERONA. These defences were improved by the Austrians after VERONA came finally into their possession in 1814, and after the revolt of 1848, a number of detached forts were added and the place was made a modern fortress of the first class.

Beyond the walls on the west side at a distance of about two thousand yards, there is a low ridge or brow, called by the Austrians the "*rideau*." Along this brow the railway to TRENT now runs on a high embankment. The space between this and the walls is sometimes called the "entrenched camp": here are the drill grounds of the garrison and the "*piazza d'armi*" where reviews are held.

Besides the forts and bastions of the *enceinte*, there are two forts just beyond the walls, one on the north-west near where

the river enters the town, and one on the south near where it flows out. On the north side there are seven forts on the protruding mountain spur; these command the whole ground to the west and east on the left bank. On the west or south-west face there is a chain of forts along the "*rideau*" terminating at each end on the right bank of the river.

The south-east side is covered by a long reach of the tortuous ADIGE, and here there is but one fort still on the right bank. On the north-east are three forts near MONTORIO, two on the hills and one in the plain.

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It will be seen from the above description that the fortifications are directed chiefly against an enemy coming from the west. It was indeed with this view that the fortress was designed, but in the hands of its actual owners attack is to be looked for rather from the north or east. About ten miles to the north-west, some forts on the heights of PASTRENGO command the passage of the ADIGE in that neighbourhood. The fortifications further north near RIVOLI were mentioned in article IV. All these together render an attack from that side difficult.

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On the 26th March SCHERER made a forward movement all along the line, and this resulted in three separate actions. The left Division under SERRURIER whose advance was assisted by a flotilla on the lake, occupied with little opposition the Rivoli position which had figured so largely in the former war while the second and third Divisions drove the Austrians from the heights of PASTRENGO and secured the passage of the Adige. MOREAU with the centre established himself on the *salmon* of VERONA and repulsed a counter-attack. On the right MONTEICARD was driven back by a superior Austrian force. The French losses on this day amounted to 3,000 besides prisoners, the Austrian to 4,000 killed and wounded and 3,000 prisoners.

SCHERER did not follow up his advantage, and lost several days in indecision and in useless marching and counter-marching of his Divisions: during this time occurred SERRURIER's engagement above referred to. His Division was after this brought across the ADIGE and SCHERER projected a passage of the river near ALBAREDO. Meanwhile the Austrians had concentrated about VERONA. The plain south of VERONA was the scene of the decisive battle which was fought on April 5th and took its name from the hamlet of MAGNANO. This plain is not open but is covered with fruit trees and walled enclosures, and is cut up by ditches and irrigation canals, and so is not favourable for cavalry, in which arm the French on this occasion had the advantage.

This battle is an example of the conflict of two armies both in motion and both ill informed as to the whereabouts of their enemy. The French were successful on their left near VILAFRANCA: the Austrian centre on the other hand penetrated in rear of that wing, but were checked at BUTTAPIETRA by the Reserve Division, which came up after having marched all night: the French right near the ADIGE met with success at first and got almost to the *rideau*, but were then driven back by the Austrian Reserve, who in their turn got round the right flank of the French. This led to the retreat of the left wing and the retirement of the whole army behind the TIONE. Each side had on this day about 4,000 killed and wounded. The French took 2,000 prisoners, but lost 4,000 and eight guns.

After this battle SCHERER withdrew behind the ADDA and gave over command to MOREAU. KRAY did not follow up his victory but remained on the MINCIO, where soon after he was joined by the Russians under SUVAROV, who now took chief command and led the Austro-Russian army to the conquest of North Italy. MELAS replaced KRAY who then conducted the siege of MANTUA as related in article V.

The fields of SCHERER's and MOREAU's successes on March 26th, 1799, were again fought over half a century later in 1848. Popular insurrections in the month of March this year had forced the Austrians to abandon the whole of their Italian possessions except the region of the Quadrilateral. The Piedmontese army had effected the passage of the MINCIO by engagements at GOITO on April 8th, MONZAMBANO on April 9th, and VALEGGIO on April 11th, and had established itself in the hilly ground east of the river and formed the siege of PESCHIERA, which at that time had no outworks except two pairs of lunettes just beyond the glacis, one pair on each side of the river.

On the 30th April a force of between 13,000 and 14,000 Piedmontese drove an inferior Austrian force from the heights of PASTRENGO and secured the passage of the ADIGE at SEGA, where it is now crossed by the VERONA-CAPRINO light railway.

On the 6th May the bulk of the army made a movement towards VERONA. This was intended to be a reconnaissance in force, but there seems to have been some expectation that a rising inside the town might occur and offer an opportunity for a real attack. This led to what is known as the "battle of SANTA LUCIA".

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“The manner in which the Infantry attack can best be supported by Artillery Fire, having regard to the present system of Artillery Training and to recent improvements in material.”

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- (1) The candidates must be members of the United Service Institution of India.
- (2) Essays are limited to 16,000 words and must be printed or type-written towards the cost of which Rs. 30 or 15 will be granted, on application, to the writer of each Essay.
- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) The Essays are to be strictly anonymous. Each must have a motto, and enclosed with the Essay there should be sent a *sealed* envelope with the motto written on the outside and the name of the candidate inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 1st March 1908.
- (6) The Essays will be submitted for decision to Referees chosen by the Council. No medal will be awarded if the Council consider that the best Essay is not of a sufficient standard of excellence.
- (7) The name of the successful candidate will be made known at the Annual Meeting of the Council in May or June 1908 and his Essay will be printed in the Journal.
- (8) All Essays submitted are to become the property of the United Service Institution of India *absolutely*, and authors will not be at liberty to make any use whatsoever of their Essays without the sanction of the Council.

By order of the Council,

W. A. STOKES, CAPTAIN.

Secretary.

Simla, 1st August 1907.

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THE JOURNAL

OF THE

United Service Institution of India

Vol. XXXVI.

January 1907.

No. 166.

THE BATTLEFIELDS OF NORTH ITALY.

BY LIEUT.-COLONEL THE HON. E. NOEL.

VII.

VERONA.

Verona is the most important strategic point of North Italy, and we find that it has been a bridge-head from the dawn of history. The Alps here abut on to the very banks of the ADIGE, and on their last spur stands the citadel of the place, now the *Castello di San Pietro*. Thus the passage from east to west or *vice versa* is barred above the place: below it, the ADIGE is a formidable obstacle and the ground soon becomes marshy. The space suitable for military movements is thus restricted to that between the mountains and the marshes, and this was even narrower in former times than it is now.

An army holding VERONA can, on the other hand, debouch on either bank of the river, can operate up its valley into the Tyrol, or eastward towards the BRENTA. We have already seen how ably Bonaparte made use of this advantage in his campaigns of 1796-97. At that time there were at VERONA four bridges over the river within the walls: there are now six, besides two railway bridges, one above and one below the town, outside the walls but within the precincts of the fortifications.

Under the Austrian rule VERONA was expanded into a modern fortress and became, what MANTUA had been in the former century, the mainstay of their power in Italy and it was made the headquarters of their "Italian army".

The ADIGE here makes a large bend and washes the very foot of the Alpine spur, and in this bend on the right bank the main

part of the town is situated, with a suburb on the left bank. The place seems from the earliest times to have occupied both banks. The ancient Roman walls, of which some remains are still extant, enclosed a portion only of the land within the bend and just enough on the other side to connect with the *Axx* on the spur. These walls were rebuilt in the year 265 by the Emperor Gallienus who added an extension to take in the amphitheatre. Even at this early period there are said to have been one or more stone bridges. The *Via Gallia*, the main road from North Italy to AQUILESA and the east, here crossed the *Adige*; several roads converged hither from the south, and hence started the *Via Claudia Augusta* leading north into Germany.

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Like most North Italian cities in the Middle Ages, VERONA became a lordship; the SCALIGER family held sway here from the middle of the thirteenth to nearly the end of the fourteenth century. Later VERONA came under the dominion of the VISCONE of MILAN and in 1405 passed to the Republic of VENICE to which it still belonged when Bonaparte came here with the French army to fight the Austrians at the end of the eighteenth century. The SCALIGERS made a third wall beyond that of THEODORIC, on the same lines as the walls now existing, and which quite doubled the area within the *cincture* on the right bank. They also built a fort at the north end of THEODORIC'S wall now known as the CASTEL VECCHIO.

Each increase on the right was accompanied by a corresponding increase on the left bank until the area reached its present extent; the perimeter of the walls is now more than five miles. The present walls were built by the Venetians in 1537, after the designs of the architect and military engineer SAMBELLI, who was a native of S. MICHELE outside the walls already mentioned as the scene of skirmishes in the *Alcorno* and *Rivotti* campaigns.

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The Austrians were commanded by Baron KRAY, an Hungarian who had served with distinction in Belgium in 1793. He was assisted by ZACH and WEYROTHER. Their forces amounted to 70,000 including some 14,000 who did not come up till the end of March. Their right occupied an entrenched camp at PASTRENGO; the centre was near VERONA; the left about LEGNAGO.

On the 26th March SCHERER made a forward movement all along the line, and this resulted in three separate actions. The left Division under SERRURIER, whose advance was assisted by a flotilla on the lake, occupied with little opposition the RIVOLI position which had figured so largely in the former war, while the second and third Divisions drove the Austrians from the heights of PASTRENGO and secured the passage of the ADIGE. MOREAU with the centre established himself on the *rideau* of VERONA and repulsed a counter-attack. On the right MONTRICHARD was driven back by a superior Austrian force. The French losses on this day amounted to 3,000 besides prisoners; the Austrian to 4,000 killed and wounded and 3,000 prisoners.

SCHERER did not follow up his advantage, and lost several days in indecision and in useless marching and counter-marching of his Divisions: during this time occurred SERRURIER's engagement above referred to. His Division was after this brought across the ADIGE and SCHERER projected a passage of the river near ALBAREDO. Meanwhile the Austrians had concentrated about VERONA. The plain south of VERONA was the scene of the decisive battle which was fought on April 5th and took its name from the hamlet of MAGNANO. This plain is not open but is covered with fruit trees and walled enclosures, and is cut up by ditches and irrigation canals, and so is not favourable for cavalry, in which arm the French on this occasion had the advantage.

This battle is an example of the conflict of two armies both in motion and both ill informed as to the whereabouts of their enemy. The French were successful on their left near VILLAFRANCA: the Austrian centre on the other hand penetrated in rear of that wing, but were checked at BUTTAPIETRA by the Reserve Division, which came up after having marched all night: the French right near the ADIGE met with success at first and got almost to the *rideau*, but were then driven back by the Austrian Reserve, who in their turn got round the right flank of the French. This led to the retreat of the left wing and the retirement of the whole army behind the TIONE. Each side had on this day about 4,000 killed and wounded. The French took 2,000 prisoners, but lost 4,000 and eight guns.

After this battle SCHERER withdrew behind the ADDA and gave over command to MOREAU. KRAY did not follow up his victory but remained on the MINCIO, where soon after he was joined by the Russians under SUVAROV, who now took chief command and led the Austro-Russian army to the conquest of North Italy. MELAS replaced KRAY who then conducted the siege of MANTUA as related in article V.

The fields of SCHERER's and MOREAU's successes on March 26th, 1799, were again fought over half a century later in 1848. Popular insurrections in the month of March this year had forced the Austrians to abandon the whole of their Italian possessions except the region of the Quadrilateral. The Piedmontese army had effected the passage of the MINCIO by engagements at GOITO on April 8th, MONZAMBANO on April 9th, and VALEGGIO on April 11th, and had established itself in the hilly ground east of the river and formed the siege of PESCHIERA, which at that time had no outworks except two pairs of lunettes just beyond the glacis, one pair on each side of the river.

On the 30th April a force of between 13,000 and 14,000 Piedmontese drove an inferior Austrian force from the heights of PASTRENGO and secured the passage of the ADIGE at SEGA, where it is now crossed by the VERONA-CAPRINO light railway.

On the 6th May the bulk of the army made a movement towards VERONA. This was intended to be a reconnaissance in force, but there seems to have been some expectation that a rising inside the town might occur and offer an opportunity for a real attack. This led to what is known as the "battle of SANTA LUCIA".

There are along the *Rideau* of VERONA, from right to left when looking west, five villages—CHIEVO, CROCE BIANCA, S. MASSIMO, SANTA LUCIA and TOMBETTA. The second was the scene of the encounter between the French and Venetian troops in April 1797. The third was the centre of MOREAU's attack on March 26th, 1799. At this time the first three were held by 10,000 men of the Austrian 2nd Corps with 40 guns, the last two by between 5,000 and 6,000 of the 1st Corps with 23 guns, besides which there were 11,000 men with 12 guns within the *enceinte* to act as reserve and to overawe the civil population. The veteran Field Marshal RADETSKY, in his eightieth year, was in command.

The Piedmontese army was to advance with three Divisions in double echelon of brigades from the centre, with one Division and one cavalry brigade in reserve and a cavalry brigade on each flank. The left centre brigade was to form the apex of this broad wedge and was to be directed on SAN MASSIMO. The left Division was to abut on CROCE BIANCA, the centre on S. MASSIMO and the right on SANTA LUCIA. The army thus advanced on a broad front by several roads converging on VERONA.

From SOMMACAMPAGNA two roads lead to VERONA, one passing through S. MASSIMO, the other through S. LUCIA. The right-centre column, the AOSTA brigade, took the latter instead of the former road and debouched on S. LUCIA before the left-centre column had reached the common objective S. MASSIMO. As the general commanding and the king were with this column the rest were made to conform and so three Divisions, the centre, the right and Reserve were concentrated towards S. LUCIA.

The AOSTA brigade—six battalions—went into action in two lines of battalion columns covered by skirmishers, and the three leading battalions deployed into line for the assault. The village and its adjoining cemetery were carried by the AOSTA brigade at 1 P.M. assisted by the CASALE brigade of the 2nd Division on the right and the Guards brigade of the Reserve Division on the left. There was now a lull in the action. No sign was seen nor sound heard of insurrection within the town. The preconceived idea of a reconnaissance prevailed and the king gave the order to retire.

In the afternoon the Austrians made a counter-attack on S. LUCIA, but as the enemy were already in full retreat this resulted in little fighting. The inclination of the centre and Reserve to the right created a wide gap between the left, the 3rd Division, and the rest of the army. This Division fought an action of its own in front of CROCE BIANCA and then likewise retired in accordance with the orders.

The retirement of the enemy justified the Austrians in claiming this action as a success, and this day may be looked upon as the turning point of the campaign. PESCHIERA indeed surrendered on the 30th May, but the chance of a victory over the field army had been lost. On the 22nd May the Austrian 3rd Corps from the north-east, 18,000 strong, effected its junction having marched round VICENZA which it left in possession of the enemy.

We cannot be surprised at the inhabitants of VERONA waiting for a more pronounced success of the troops before committing themselves to a revolt. The 3rd Division on the left neutralised 10,000 Austrians; not more than 15,000 remained to hold the city and oppose the 24,000 Piedmontese who had pierced the *rideau*. There were here six brigades, of which only one had been engaged seriously and three not at all. It is possible that a vigorous advance of these victorious troops would have enabled them to enter the place *pêle mêle* with the enemy.

The Piedmontese staff had had a project for bringing up the Roman and any other available contingents for a united effort against VERONA. It was incidentally mentioned in the last article how the first named came to be moved suddenly to TREVISO. This was done at the request of the provisional government of the short-lived Venetian Republic, who wished their own territory covered against the enemy advancing from the north-east. In revolutionary movements each state naturally considers its own special interests, and united action on sound strategic lines becomes difficult or impossible. This ill-starred reconnaissance of S. LUCIA was itself undertaken owing to the clamour of the LOMBARD populace who were impatient to see the army do something.

An obelisk now marks the field of S. LUCIA and yearly a patriotic demonstration is held on the anniversary of the battle. Beyond S. LUCIA, nine miles from VERONA by a straight road, lies VILAFRANCA which is an important point in this region: here was often stationed Bonaparte's cavalry reserve in 1796. The principal inn is the house occupied by King Charles Albert in 1848, and in another street is found the house where the French and Austrian Emperors arranged peace in 1859.

A monument outside the town on the north stands near the spot where the 49th Italian regiment in square resisted a charge of Austrian cavalry on June 24th, 1866. The Crown Prince, afterwards Humbert I, was inside the square. Another column near STAFFALO marks the spots where his brother AMADEO was wounded on the same day.

At CASTOZZA there is a stone monument with an ossary underneath and a small museum. This is to celebrate two battles, both Austrian victories, the first on the 23rd, 24th and 25th July 1848 which was followed by the retreat of the national forces to the TICINO, and the second on the 24th June 1866 when LA MARMORA failed in his attempt to invade and had to recross the MINCIO. This anniversary is celebrated every year.

The MINCIO was the scene of the last two battles of the eighteenth century.

By the Convention of ALESSANDRIA after the battle of MARENGO (June 14th, 1800), the Austrians had to withdraw to the MINCIO and the French might move up as far as the CHIESE. When, after a long armistice, hostilities were resumed in December, these were the positions held by the opposing forces. The strength was about sixty

thousand on each side. The French were commanded by BRUNE and were formed in four Corps, right, left, centre, and reserve, each of two Divisions, besides an advanced guard of one Division and a Division of cavalry. The Austrians were under BELLEGARDE.

In most of its course the left bank of the MINCIO commands the right, but at the two westward bends at MONZAMBANO and POZZOLO these conditions are reversed. BRUNE's project was to make a feint at the latter and to cross at the former spot, but one day later. On Christmas Day, 1800, he effected the passage at POZZOLO and became involved in severe fighting prolonged into the night and which led to the 2nd Corps being brought up to support the 1st. In spite of this success the French commander clung to his intention of making his main effort by his left. The next day, using three Corps besides his advanced guard, he passed the river at MONZAMBANO, and moving along the left bank secured the passage also at BORGHETTO VALEGGIO, the spot where Bonaparte crossed in 1796. The Austrians lost five thousand in killed, wounded and prisoners on the first day, and from two to three thousand on the second: their army retreated beyond VERONA fighting a rear guard action at S. LUCIA on the *rideau*.

At dawn on the first day of the nineteenth century the French threw a bridge over the ADIGE at BUSSOLENGO a little below PASTRENGO, and entered VERONA by the TRENT gate. The Austrians still held the "castles". The French forces spread northwards into the TYROL and the main body advanced through VICENZA as far as TREVISO.

It was in connexion with these operations that MACDONALD made his famous passage of the SPLUGEN in December 1800. His Corps then came in as the left wing of the "Army of Italy" and occupied TRENT.

By the "Armistice of TREVISO" the French got possession of VERONA, PASCHIERA, and LEGNAGO and Napoleon made the Austrians give up MANTUA also as a preliminary to the negotiations at LUNEVILLA. The peace signed there in February this year, 1801, put an end to the war on the continent of Europe, and ushered in the Peace of the Consulate, which separates the Wars of the Republic from those of the Empire.

The conditions were much the same as those of CAMPOFORMIO in 1797, but the territory of the Cis-alpine—now called the *Italian Republic* was enlarged. The ADIGE from the TYROL to the sea was made the boundary of the Austrian dominions in Italy. This resulted in the city of VERONA being divided between two states, and so when war broke out again in 1805, MASSENA who was then commanding the French forces in Italy began operations by seizing the Austrian part of the place on the 19th October. His victory at CALDIERO at the end of this month was mentioned in article VI.

VERONA was after this wholly in Napoleon's "Kingdom of Italy," but on his fall in 1814 it was once more taken by the Austrians, in whose possession it remained until its final liberation from the yoke of the stranger in 1866.

VIII.

SOLFERINO.

Of all the battlefields of North Italy, the most popular probably is SOLFERINO, as it has to do with events that belong to our own time and are well within the memory of many still living. We cannot then better close these articles than by a short notice of this the last of Italy's great battles.

The campaign of 1859 is in several aspects one of high interest. Firstly, there is the historically romantic connection of a campaign of a French army under another Napoleon in the same theatre in which the first Napoleon began his wonderful career as a great Captain, and Napoleon III's triumph at SOLFERINO was won on the very spot of Napoleon I's remarkable victory of CASTIGLIONE which formed the subject of the first of these articles.

Secondly, SOLFERINO was the last great battle in Europe fought with muzzle-loading guns and smooth-bore cannon. From the earliest ages, whether in serried masses, deep columns, small columns, or six to two deep lines men had fought in *close order*, shoulder to shoulder. The next war to this saw all close order formations dissolve into swarms of skirmishers. This change from close to extended order is perhaps the greatest that has taken place in the whole history of minor tactics. Thus in one sense SOLFERINO marks the end of an epoch which had lasted from Cyrus the Great.

Thirdly, this campaign may be said to have "made a nation" and a nation which has shown sincere friendship for ourselves. The battle of SOLFERINO proved the death blow to that German domination in Italy which had weighed so heavily on the Peninsula for more than ten centuries. Lastly, it has for Britishers a further interest inasmuch as many of those, both French and Italian, who in this year fought and fell in the vineyards and maize fields under the Alps, had only a few years before been our comrades in arms in the far off CRIMEA and wore medals with the head of Queen Victoria.

The disaster of NOVARA in March 1849 re-established Austrian dominion in North Italy. The Italian patriots had to wait ten years before they could make another effort, and on this occasion they had the very substantial support of France.

The French troops were conveyed to Italy by sea and landed at GENOA, one corps only moving by land over the MONT CENIS. The first encounter, brought about by an Austrian reconnaissance in force, took place on May 20th at MONTEBELLO, east of VOGHERA, and which had been the scene of an engagement in 1800, five days before the battle of MARENGO, when the relative positions of the two opposing armies were exactly reversed.

This made it appear as if the French meant to copy Bonaparte's action in 1796 and to turn the lines of defence of some of the Lombard rivers by crossing the Po below their confluences. As a matter of fact Napoleon III had resolved on the opposite course, to operate by the left near the Alps. This plan is said to have been recommended to him before his departure from Paris by the veteran General JOMINI, the well-known military historian. This flank march from right to left was helped by railways and was carried out under cover of the Piedmontese army who held a central position, and who during the operation repulsed a weak Austrian offensive at PALESTRO on the last day of May.

The French effected the passage of the TICINO on June 3rd at TURBIGO where Napoleon I crossed it on May 31st, 1800, and on June 4th they defeated the Austrians at MAGENTA. This battle was not of a decisive character, and not more than half the Austrian forces in Lombardy had taken part in it; but nevertheless their commander Count GIULAY decided on a retreat to the MINCIO, fighting only a rear guard action on the 8th at MELEGNANO to cover the passage of the ADDA. This is the same as MARIGNAN, the scene of the great victory of Francis I over the Swiss in 1515 after his renowned passage of the Alps.

The allied armies followed leisurely and by June 20th had reached the river CHIESE. On this same day the Emperor of Austria, who had now arrived in Italy and taken supreme command of his army, established his headquarters at VILLAFRANCA.

The Austrian forces now concentrated behind the MINCIO consisted of eight corps d'armée, divided into two armies, each of four corps and a cavalry division. The first army on the left was under Count WIMPFEN, and the second on the right under Count SCHLICK. The Austrian corps consisted generally of four brigades, each of seven battalions, and a few squadrons of cavalry, but the fifth and ninth corps had five brigades and the eighth six. Each corps formed two divisions. The two cavalry divisions had twenty-four squadrons each. The total Austrian forces must have been nearly if not quite a quarter of a million, but from this whole large deductions must be made for the garrisons of the fortresses and towns, and there was one corps retained in the TYROL. The force present at the battle seems to have been about 170,000.

The French army consisted of four corps d'armée and the Imperial Guard. The corps had three divisions, except the Guard and the second corps which had only two. The divisions varied somewhat in strength but were generally of thirteen battalions. A cavalry division of sixteen squadrons was attached to the first and third corps, and the Imperial Guard had one of twenty-four squadrons. The remaining corps had a brigade only of eight squadrons. Besides these there was a fifth corps under Prince Napoleon, the greater part of which had debarked in TUSCANY. After the battle of MAGENTA the Austrians withdrew whatever garrisons they had south of the Po and concentrated their whole strength in VENETIA, so Prince Napoleon

after occupying Florence had made an unopposed march over the APPENNINES and was now moving to join the army accompanied by a Tuscan division, but he did not arrive in time to take part in the battle. The French strength on the CHIESE numbered about 125,000.

The Piedmontese army, on the left of the French, was formed in five divisions, each of two brigades and two battalions of BERSAGLIERI, and one cavalry division. One division—the fourth, CIALDINI'S,—had been detached to cover the left against any attack from the TYROL, and so only four divisions, about 40,000, took part in the battle. The Piedmontese were commanded by their soldier king VICTOR EMANUEL, with General LA MARMORA as chief of the staff. The total allied force engaged was then about 165,000, with four hundred guns.

Thus the armies of three nations, each commanded by its sovereign in person, were now facing one another at a distance of only two marches, and were about to engage in a great contest which was to decide the fate of Italy.

Of the country between the CHIESE and the MINCIO, the tract now separating the rival host, the leading feature is a low ridge or range of low hills, which coming down from the Alps passes by LONATO, CASTIGLIONE, SOLFERINO, CAVRIANA and VOLTA, and whose summits rise about four hundred feet above the plain. The *rocca* of SOLFERINO on which the "Tower" stands is the culminating point of the range and is six hundred and eighty feet above sea level. The ground to the east and north of this ridge is a region of low hills, with a somewhat sandy soil, except along the shore of the lake where it is flat. To the west and south of the ridge is a vast level plain.

The plains of North Italy are as a rule not suitable for cavalry, being much intersected by water-courses, and rows of fruit trees from which vines are trailed. One exception is the plain between the BORMIDA and the SCRIVIA where the battle of MARENGO was fought, another is the tract now under consideration. Between the CHIESE and the MINCIO the ground is quite open, in some places heathy and is well adapted to cavalry action.

The Austrians decided not to await attack behind the MINCIO but to take the counter-offensive. They seem to have expected to find the enemy still on the CHIESE and their plan was to turn the right of the French, drive them from their line of communications and force the allied army into the Alps. With this view they made the following movements on June 23rd.

2nd Army.

VIII Corps	BENEDEK	by	SALIONZE	on	POZZOLENGO.
V "	STADION	"	VALEGGIO	"	SOLFERINO.
I "	CLAM-GALLAS	"	do.	"	CAVRIANA.
Cavy. Divn.	MENSDORF	"	FERRI *	"	do.
VII Corps	ZOBEL	"	do.	"	VOLTA in reserve.

* About a mile below Pozzolo.

part of the town is situated, with a suburb on the left bank. The place seems from the earliest times to have occupied both banks. The ancient Roman walls, of which some remains are still extant, enclosed a portion only of the land within the bend and just enough on the other side to connect with the *Arx* on the spur. These walls were rebuilt in the year 265 by the Emperor Gallienus who added an extension to take in the amphitheatre. Even at this early period there are said to have been one or more stone bridges. The *Via Gallica*, the main road from North Italy to AQUILESA and the east, here crossed the ADIGE; several roads converged hither from the south, and hence started the *Via Claudia Augusta* leading north into Germany.

The Gothic king THEODORIC built another wall further out and including the whole of the ground within the bend, and he also rebuilt the citadel which he made his residence.

Like most North Italian cities in the Middle Ages, VERONA became a lordship: the SCALIGER family held sway here from the middle of the thirteenth to nearly the end of the fourteenth century. Later VERONA came under the dominion of the VISCONTI of MILAN and in 1405 passed to the Republic of VENICE, to which it still belonged when Bonaparte came here with the French army to fight the Austrians at the end of the eighteenth century. The SCALIGERS made a third wall beyond that of THEODORIC on the same lines as the walls now existing, and which quite doubled the area within the *cuneate* on the right bank. They also built a fort at the north end of THEODORIC'S wall now known as the CASTEL VECCHIO.

Each increase on the right was accompanied by a corresponding increase on the left bank until the area reached its present extent, the perimeter of the walls is now more than five miles. The present walls were built by the Venetians in 1537, after the designs of the architect and military engineer SAMBICHELLI, who was a native of S. MICHELE outside the walls already mentioned as the scene of skirmishes in the ARBONIE and RIVOLI campaigns.

On the left bank where the walls cross the Alpine spur, is the fort of CASTEL SAN FELICE, this is above the old citadel and is the highest point of the *cuneate*. This fort, the citadel and the SCALIGERS' stronghold of the CASTEL VECCHIO are the three castles of VERONA. These defences were improved by the Austrians after VERONA came finally into their possession in 1814 and after the revolt of 1848 a number of detached forts were added and the place was made a full first class fortress of the first class.

Beyond the walls on the west side at a distance of about two thousand yards there is a village or hamlet called by the Austrians *San Giovanni Lupatoto*. A good horse track runs to Trent from this on a high embankment. The space between this and the walls is some ten miles of the frontier of the empire, here are the strong garrisons of the garrison and the *provincia* where the army are held.

Besides the forts and bastions of the *cuneate* there are two forts, first beyond the walls, one on the north west near where

the river enters the town, and one on the south near where it flows out. On the north side there are seven forts on the protruding mountain spur; these command the whole ground to the west and east on the left bank. On the west or south-west face there is a chain of forts along the "*rideau*" terminating at each end on the right bank of the river.

The south-east side is covered by a long reach of the tortuous **ADIGE**, and here there is but one fort still on the right bank. On the north-east are three forts near **MONTORIO**, two on the hills and one in the plain.

In more recent times some outer forts have been added about two thousand yards further off, one of which is on the left bank. Some of these are built in the very line of the main roads which run perfectly straight, but are deflected round the glacis of these forts.

It will be seen from the above description that the fortifications are directed chiefly against an enemy coming from the west. It was indeed with this view that the fortress was designed, but in the hands of its actual owners attack is to be looked for rather from the north or east. About ten miles to the north-west, some forts on the heights of **PASTRENGO** command the passage of the **ADIGE** in that neighbourhood. The fortifications further north near **RIVOLI** were mentioned in article IV. All these together render an attack from that side difficult.

PESCHIERA has also now a ring of detached forts which enclose the ground occupied by the besiegers of 1848. On the east side likewise some new forts have been raised on the hills beyond **SAN MARTINO**. Thus **VERONA** and all its outforts, and its three satellites **PESCHIERA**, **MANTUA** and **LEGNAGO** form together one of the most important fortified areas in Europe. **VERONA** is now the headquarters of the fifth Army Corps of Italy, a district which includes the whole Venetian province and nearly all the Italo-Austrian frontier. Most of the military establishments are between the *enceinte* and the old wall of **THEODORIC**.

The amphitheatre which is the chief object of attraction to tourists is between the wall of **THEODORIC** and the old Roman wall. This is one of the best preserved remains of Roman antiquity extant. It no longer witnesses the fights of wild beasts, nor hears the "*morituri te salutant*" of the gladiators, but is used for more gentle sports such as bicycle races and balloon ascents.

Another sight is the "*Archdegli Scaligeri*," the elevated and carved tombs of the **SCALA** dynasty. The "*Escalus, Prince of VERONA*," in "*Romeo and Juliet*" was **BARTOLOMMEO** of this house who reigned from 1301 to 1304. This prince received the poet **DANTE** on his expulsion from **FLORENCE**. It is probably in connexion with the Shakespeare plays that **VERONA** is best known to literary Englishmen. The "*Two Gentlemen of VERONA*" has but little to do with the town from which it takes its title as its scene is laid mostly in or near **MILAN**, but **VERONA** is indelibly associated with the names of *Romeo and Juliet*. The house of the **CAPULETS** still exists

in the narrow street leading to the bridge over which one passes to reach the eastern gate. It has no romance in its appearance, but, six hundred years ago, it may well have had an "orchard" at the back, and it was probably on that side that occurred the "window scene".

VERONA has not, like MANTUA, an historic siege, but the ground around has been fought over almost to the very city walls. The battlefields on the eastern side have been already referred to in former articles, but there remain still several that deserve attention on the western side.

The guard-house and the houses near it within the Trent gate are still spotted with bullet marks dating from 1848. Leaving the town by this gate, on the river's left bank, we are soon on the scene of the repulse of SERRURIER'S Division on the 30th March 1799. VENETIA had by the treaty of CAMPO-FORMIO in 1797 been acquired by Austria. The frontier of the Cisalpine Republic crossed the lake of GARDA and struck the ADIGE below VERONA. Thus when the war of the Second Coalition broke out in the spring of 1799, the Austrians were in possession of the ADIGE with VERONA and LEGNAGO, while the French held the MINCIO with MANTUA and PESCHIERA.

Bonaparte was now away in Egypt. The French forces were commanded by SCHERER, formerly commander of the "Army of Italy," and the victor of LOANO in November 1795, since when he had been War Minister. MOREAU, a far abler man, was his subordinate. In this campaign we discern a tendency towards the Army Corps organisation. In 1796-97 Bonaparte, as chief, handled Divisions of seven to ten thousand men as distinct units. Now SCHERER took more special command of the first, second and third Divisions forming the left of his army, MOREAU controlled the fourth and fifth in the centre; the right consisted of a single Division, the sixth, under MONTEGHIARD. The total strength was 46,000.

The Austrians were commanded by Baron KRAY, an Hungarian who had served with distinction in Belgium in 1793. He was assisted by ZACH and WEYROTHER. Their forces amounted to 70,000 including some 14,000 who did not come up till the end of March. Their right occupied an entrenched camp at PASTRENGO, the centre was near VERONA, the left about LEGNAGO.

On the 26th March SCHERER made a forward movement all along the line, and this resulted in three separate actions. The left Division under SERRURIER whose advance was assisted by a fleet on the lake, occupied with little opposition the Rivoli position which had figured so largely in the former war while the second and third Divisions drove the Austrians from the heights of PASTRENGO and secured the passage of the Adige. MOREAU with the centre established himself on the *colonna* of VERONA and repulsed a counter-attack. On the right MONTEGHIARD was driven back by a superior Austrian force. The French losses on this day amounted to 3,000 besides prisoners, the Austrian to 4,000 killed and wounded and 3,000 prisoners.

SCHERER did not follow up his advantage, and lost several days in indecision and in useless marching and counter-marching of his Divisions: during this time occurred SERRURIER's engagement above referred to. His Division was after this brought across the ADIGE and SCHERER projected a passage of the river near ALBAREDO. Meanwhile the Austrians had concentrated about VERONA. The plain south of VERONA was the scene of the decisive battle which was fought on April 5th and took its name from the hamlet of MAGNANO. This plain is not open but is covered with fruit trees and walled enclosures, and is cut up by ditches and irrigation canals, and so is not favourable for cavalry, in which arm the French on this occasion had the advantage.

This battle is an example of the conflict of two armies both in motion and both ill informed as to the whereabouts of their enemy. The French were successful on their left near VILLAFRANCA: the Austrian centre on the other hand penetrated in rear of that wing, but were checked at BUTTAPIETRA by the Reserve Division, which came up after having marched all night: the French right near the ADIGE met with success at first and got almost to the *rideau*, but were then driven back by the Austrian Reserve, who in their turn got round the right flank of the French. This led to the retreat of the left wing and the retirement of the whole army behind the TIONE. Each side had on this day about 4,000 killed and wounded. The French took 2,000 prisoners, but lost 4,000 and eight guns.

After this battle SCHERER withdrew behind the ADDA and gave over command to MOREAU. KRAY did not follow up his victory but remained on the MINCIO, where soon after he was joined by the Russians under SUVAROV, who now took chief command and led the Austro-Russian army to the conquest of North Italy. MELAS replaced KRAY who then conducted the siege of MANTUA as related in article V.

The fields of SCHERER's and MOREAU's successes on March 26th, 1799, were again fought over half a century later in 1848. Popular insurrections in the month of March this year had forced the Austrians to abandon the whole of their Italian possessions except the region of the Quadrilateral. The Piedmontese army had effected the passage of the MINCIO by engagements at GOITO on April 8th, MONZAMBANO on April 9th, and VALEGGIO on April 11th, and had established itself in the hilly ground east of the river and formed the siege of PESCHIERA, which at that time had no outworks except two pairs of lunettes just beyond the glacis, one pair on each side of the river.

On the 30th April a force of between 13,000 and 14,000 Piedmontese drove an inferior Austrian force from the heights of PASTRENGO and secured the passage of the ADIGE at SEGA, where it is now crossed by the VERONA-CAPRINO light railway.

On the 6th May the bulk of the army made a movement towards VERONA. This was intended to be a reconnaissance in force, but there seems to have been some expectation that a rising inside the town might occur and offer an opportunity for a real attack. This led to what is known as the "battle of SANTA LUCIA".

There are along the *Robau* of VERONA, from right to left when looking west, five villages—CHIEVO, CROCE BIANCA, S. MASSIMO, SANTA LUCIA and TOMBETTA. The second was the scene of the encounter between the French and Venetian troops in April 1797. The third was the centre of MOREAU'S attack on March 26th, 1799. At this time the first three were held by 10,000 men of the Austrian 2nd Corps with 40 guns, the last two by between 5,000 and 6,000 of the 1st Corps with 23 guns, besides which there were 11,000 men with 12 guns within the *cuccate* to act as reserve and to overawe the civil population. The veteran Field Marshal RADERSKY, in his eightieth year, was in command.

The Piedmontese army was to advance with three Divisions in double echelon of brigades from the centre, with one Division and one cavalry brigade in reserve and a cavalry brigade on each flank. The left centre brigade was to form the apex of this broad wedge and was to be directed on SAN MASSIMO. The left Division was to abut on CROCE BIANCA, the centre on S. MASSIMO and the right on SANTA LUCIA. The army thus advanced on a broad front by several roads converging on VERONA.

From SOMMACAMPAGNA two roads lead to VERONA, one passing through S. MASSIMO the other through S. LUCIA. The right centre column, the AOSTA brigade, took the latter instead of the former road and debouched on S. LUCIA before the left-centre column had reached the common objective S. MASSIMO. As the general commanding and the king were with this column the rest were made to conform and so three Divisions, the centre, the right and Reserve were concentrated towards S. LUCIA.

The AOSTA brigade, six battalions, went into action in two lines of battalion columns covered by skirmishers and the three leading battalions deployed into line for the assault. The village and its adjoining cemetery were carried by the AOSTA brigade at 1 P.M. assisted by the CASALE brigade of the 2nd Division on the right and the Guards brigade of the Reserve Division on the left. There was now a lull in the action. No sign was seen nor sound heard of insurrection within the town. The preconceived idea of a *reconnaissance* prevailed and the king gave the order to retire.

In the afternoon the Austrians made a counter attack on S. LUCIA, but as the enemy were already in full retreat this resulted in little fighting. The inclination of the centre and Reserve to the right created a wide gap between the left, the 3rd Division, and the rest of the army. This Division fought an action of its own in front of CROCE BIANCA and then likewise retired in accordance with the orders.

The retirement of the enemy justified the Austrians in claiming this action as a success, and this day may be looked upon as the turning point of the campaign. PESCHIERA indeed surrendered on the 5th May, but the chance of a victory over the field army had been lost. On the 22nd May the Austrian 4th Corps from the north-east, 18,000 strong, effected its capture having nearly closed round VIENNA which it left in possession of the enemy.

We cannot be surprised at the inhabitants of VERONA waiting for a more pronounced success of the troops before committing themselves to a revolt. The 3rd Division on the left neutralised 10,000 Austrians; not more than 15,000 remained to hold the city and oppose the 24,000 Piedmontese who had pierced the *rideau*. There were here six brigades, of which only one had been engaged seriously and three not at all. It is possible that a vigorous advance of these victorious troops would have enabled them to enter the place *pêle mêle* with the enemy.

The Piedmontese staff had had a project for bringing up the Roman and any other available contingents for a united effort against VERONA. It was incidentally mentioned in the last article how the first named came to be moved suddenly to TREVISO. This was done at the request of the provisional government of the short-lived Venetian Republic, who wished their own territory covered against the enemy advancing from the north-east. In revolutionary movements each state naturally considers its own special interests, and united action on sound strategic lines becomes difficult or impossible. This ill-starred reconnaissance of S. LUCIA was itself undertaken owing to the clamour of the LOMBARD populace who were impatient to see the army do something.

An obelisk now marks the field of S. LUCIA and yearly a patriotic demonstration is held on the anniversary of the battle. Beyond S. LUCIA, nine miles from VERONA by a straight road, lies VILLAFRANCA which is an important point in this region: here was often stationed Bonaparte's cavalry reserve in 1796. The principal inn is the house occupied by King Charles Albert in 1848, and in another street is found the house where the French and Austrian Emperors arranged peace in 1859.

A monument outside the town on the north stands near the spot where the 49th Italian regiment in square resisted a charge of Austrian cavalry on June 24th, 1866. The Crown Prince, afterwards Humbert I, was inside the square. Another column near STAFFALO marks the spots where his brother AMADEO was wounded on the same day.

At CASTOZZA there is a stone monument with an ossary underneath and a small museum. This is to celebrate two battles, both Austrian victories, the first on the 23rd, 24th and 25th July 1848 which was followed by the retreat of the national forces to the TICINO, and the second on the 24th June 1866 when LA MARMORA failed in his attempt to invade and had to recross the MINCIO. This anniversary is celebrated every year.

The MINCIO was the scene of the last two battles of the eighteenth century.

By the Convention of ALESSANDRIA after the battle of MARENGO (June 14th, 1800), the Austrians had to withdraw to the MINCIO and the French might move up as far as the CHIESE. When, after a long armistice, hostilities were resumed in December, these were the positions held by the opposing forces. The strength was about sixty

thousand on each side. The French were commanded by BRUNE and were formed in four Corps, right, left, centre, and reserve, each of two Divisions, besides an advanced guard of one Division and a Division of cavalry. The Austrians were under BELLEGARDE.

In most of its course the left bank of the MINCIO commands the right, but at the two westward bends at MONZAMBANO and POZZOLO these conditions are reversed. BRUNE'S project was to make a feint at the latter and to cross at the former spot, but one day later. On Christmas Day, 1800, he effected the passage at POZZOLO and became involved in severe fighting prolonged into the night and which led to the 2nd Corps being brought up to support the 1st. In spite of this success the French commander clung to his intention of making his main effort by his left. The next day, using three Corps besides his advanced guard, he passed the river at MONZAMBANO and moving along the left bank secured the passage also at BORGHETTO VALEGGIO, the spot where Bonaparte crossed in 1796. The Austrians lost five thousand in killed, wounded and prisoners on the first day, and from two to three thousand on the second; their army retreated beyond VERONA fighting a rear guard action at S. LUCIA on the *colau*.

At dawn on the first day of the nineteenth century the French threw a bridge over the ADIGE at BUSOLENGO a little below PASTRENGO and entered VERONA by the TREST gate. The Austrians still held the castles. The French forces spread northwards into the TYROL and the main body advanced through VICENZA as far as TREVISO.

It was in connexion with these operations that MACDONALD made his famous passage of the SPIEGEN in December 1800. His Corps then came in as the left wing of the "Army of Italy" and occupied TIENT.

By the "Armistice of TREVISO" the French got possession of VERONA, PASTRENGO and LEGNAGO, and Napoleon made the Austrians give up MANTUA also as a preliminary to the negotiations at LUNEVILLE. The peace signed there in February this year, 1801, put an end to the war on the continent of Europe, and ushered in the Peace of the Consulate which separates the Wars of the Republic from those of the Empire.

The conditions were much the same as those of CAMBRONNE in 1797, but the territory of the Cisalpine now called the *Italian Republic* was enlarged. The Adige from the TYROL to the sea was made the boundary of the Austrian dominions in Italy. This resulted in the city of VERONA being divided between two states, and so when war broke out again in 1805 MASSENA who was then commanding the French forces in Italy began operations by seizing the Austrian part of the province on 14th October. His victory at CAMBRONNE on the 6th of November was not followed up by the VI.

ARMY who offered to leave Napoleon's Kingdom of Italy. Instead of this in 1814 it was once more taken by the Austrians, in whose possession it remained until its evacuation from the yoke of the stranger in 1866.

VIII.

SOLFERINO.

Of all the battlefields of North Italy, the most popular probably is SOLFERINO, as it has to do with events that belong to our own time and are well within the memory of many still living. We cannot then better close these articles than by a short notice of this the last of Italy's great battles.

The campaign of 1859 is in several aspects one of high interest. Firstly, there is the historically romantic connection of a campaign of a French army under another Napoleon in the same theatre in which the first Napoleon began his wonderful career as a great Captain, and Napoleon III's triumph at SOLFERINO was won on the very spot of Napoleon I's remarkable victory of CASTIGLIONE which formed the subject of the first of these articles.

Secondly, SOLFERINO was the last great battle in Europe fought with muzzle-loading guns and smooth-bore cannon. From the earliest ages, whether in serried masses, deep columns, small columns, or six to two deep lines men had fought in *close order*, shoulder to shoulder. The next war to this saw all close order formations dissolve into swarms of skirmishers. This change from close to extended order is perhaps the greatest that has taken place in the whole history of minor tactics. Thus in one sense SOLFERINO marks the end of an epoch which had lasted from Cyrus the Great.

Thirdly, this campaign may be said to have "made a nation" and a nation which has shown sincere friendship for ourselves. The battle of SOLFERINO proved the death blow to that German domination in Italy which had weighed so heavily on the Peninsula for more than ten centuries. Lastly, it has for Britishers a further interest inasmuch as many of those, both French and Italian, who in this year fought and fell in the vineyards and maize fields under the Alps, had only a few years before been our comrades in arms in the far off CRIMEA and wore medals with the head of Queen Victoria.

The disaster of NOVARA in March 1849 re-established Austrian dominion in North Italy. The Italian patriots had to wait ten years before they could make another effort, and on this occasion they had the very substantial support of France.

The French troops were conveyed to Italy by sea and landed at GENOA, one corps only moving by land over the MONT CENIS. The first encounter, brought about by an Austrian reconnaissance in force, took place on May 20th at MONTEBELLO, east of VOGHERA, and which had been the scene of an engagement in 1800, five days before the battle of MARENGO, when the relative positions of the two opposing armies were exactly reversed.

This made it appear as if the French meant to copy Bonaparte's action in 1796 and to turn the lines of defence of some of the Lombard rivers by crossing the Po below their confluences. As a matter of fact Napoleon III had resolved on the opposite course, to operate by the left near the Alps. This plan is said to have been recommended to him before his departure from Paris by the veteran General JOMINI, the well known military historian. This flank march from right to left was helped by railways and was carried out under cover of the Piedmontese army who held a central position, and who during the operation repulsed a weak Austrian offensive at PALESTRO on the last day of May.

The French effected the passage of the TICINO on June 3rd at TURIGO where Napoleon I crossed it on May 31st, 1800, and on June 4th they defeated the Austrians at MAGENTA. This battle was not of a decisive character, and not more than half the Austrian forces in Lombardy had taken part in it; but nevertheless their commander Count GULAY decided on a retreat to the MINCIO, fighting only a rearguard action on the 8th at MELEGNANO to cover the passage of the ADDA. This is the same as MARGNAN, the scene of the great victory of Francis I over the Swiss in 1515 after his renowned passage of the Alps.

The allied armies followed leisurely and by June 20th had reached the river CHIESE. On this same day the Emperor of Austria, who had now arrived in Italy and taken supreme command of his army, established his headquarters at VILLAFRANCA.

The Austrian forces now concentrated behind the MINCIO consisted of eight corps d'armes, divided into two armies, each of four corps and a cavalry division. The first army on the left was under Count WIMPFEN, and the second on the right under Count SCHLICK. The Austrian corps consisted generally of four brigades, each of seven battalions, and a few squadrons of cavalry, but the fifth and ninth corps had five brigades and the eighth six. Each corps formed two divisions. The two cavalry divisions had twenty four squadrons each. The total Austrian force must have been nearly if not quite a quarter of a million, but from this whole large deductions must be made for the garrisons of the fortresses and towns, and there was one corps retained in the Tyrol. The force present at the battle seems to have been about 170,000.

The French army consisted of four corps d'armes and the Imperial Guard. The corps had three divisions, except the Guard and the second corps which had only two. The divisions varied somewhat in strength but were generally of thirteen battalions. A cavalry division of sixteen squadrons was attached to the first and third corps, and the Imperial Guard had three of twenty four squadrons. The remaining corps had a total of only eight squadrons. Besides these there was a fifth corps of the Prince Napoleon, the greater part of which had been raised in Tuscany. After the battle of MAGENTA the Austrians withdrew whatever garrisons they had south of the Po and concentrated their whole strength in VENEZIA, so Prince Napoleon

after occupying Florence had made an unopposed march over the APENNINES and was now moving to join the army accompanied by a Tuscan division, but he did not arrive in time to take part in the battle. The French strength on the CHIESE numbered about 125,000.

The Piedmontese army, on the left of the French, was formed in five divisions, each of two brigades and two battalions of BERSAGLIERI, and one cavalry division. One division—the fourth, CIALDINI'S,—had been detached to cover the left against any attack from the TYROL, and so only four divisions, about 40,000, took part in the battle. The Piedmontese were commanded by their soldier king VICTOR EMANUEL, with General LA MARMORA as chief of the staff. The total allied force engaged was then about 165,000, with four hundred guns.

Thus the armies of three nations, each commanded by its sovereign in person, were now facing one another at a distance of only two marches, and were about to engage in a great contest which was to decide the fate of Italy.

Of the country between the CHIESE and the MINCIO, the tract now separating the rival host, the leading feature is a low ridge or range of low hills, which coming down from the Alps passes by LONATO, CASTIGLIONE, SOLFERINO, CAVRIANA and VOLTA, and whose summits rise about four hundred feet above the plain. The *rocca* of SOLFERINO on which the "Tower" stands is the culminating point of the range and is six hundred and eighty feet above sea level. The ground to the east and north of this ridge is a region of low hills, with a somewhat sandy soil, except along the shore of the lake where it is flat. To the west and south of the ridge is a vast level plain.

The plains of North Italy are as a rule not suitable for cavalry, being much intersected by water-courses, and rows of fruit trees from which vines are trailed. One exception is the plain between the BORMIDA and the SCRIVIA where the battle of MARENGO was fought, another is the tract now under consideration. Between the CHIESE and the MINCIO the ground is quite open, in some places heathy and is well adapted to cavalry action.

The Austrians decided not to await attack behind the MINCIO but to take the counter-offensive. They seem to have expected to find the enemy still on the CHIESE and their plan was to turn the right of the French, drive them from their line of communications and force the allied army into the Alps. With this view they made the following movements on June 23rd.

2nd Army.

VIII Corps	BENEDEK	by	SALIONZE	on	POZZOLENGO.
V "	STADION	"	VALEGGIO	"	SOLFERINO.
I "	CLAM-GALLAS	"	do.	"	CAVRIANA.
Cavv. Divn.	MENSDOERF	"	FERRI *	"	do.
VII Corps	ZOBEL	"	do.	"	VOLTA in reserve.

* About a mile below Pozzolo.

Each of these three Divisions was to throw forward a strong reconnoissance.

The 2nd Division—FANTI—was to remain near LONATO in reserve.

Both sides had numerous cavalry but they were not used for reconnoitring on a large scale. On the night of the 23rd, the outposts were within a short distance of one another on a wide front, but neither army was aware of the close presence of the other. From the above situation it is evident that a conflict must occur as soon as either army should move forward.

The French troops rose early from their bivouacs on the morning of June 24th, some as early as two o'clock. At 5 A.M. the advanced guards of the 1st and 2nd Corps came upon the Austrian outposts a little beyond CASTIGLIONE, the former on the ridge, the latter on the plain. By 7 A.M. all the columns had come into contact with the enemy; at this hour the—

III Corps was at CASTEL GOFFREDO.

IV do. " " MEDOLE.

II do. " " about 3 miles beyond CASTIGLIONE.

I do " " 2 " "

The Piedmontese advanced troops, right, beyond VENZAGO.

" " left, " S. MARTINO.

The Reserves had not moved.

The firing in the early morning came as a surprise to the soldiers of the allied armies, but as the rattle of musketry and the roar of cannon spread outwards from the centre to the wings in ever increasing intensity, all must have felt that they were about to engage in a great battle.

At 8 o'clock at CASTIGLIONE the Emperor received such reports from his Corps commanders as to leave no doubt that it was not, as he had at first supposed, a reconnoissance in force, but the whole Austrian army that he had before him. He decided to make his main effort on the centre, and ordered the infantry of the Guard to follow the 1st Corps, the Cavalry the 2nd, directing the troops on the right and left of these to converge inwards. Shortly after this he sent directions to CANROBERT commanding the 3rd Corps to look out for a large force reported to have left MANTUA the day before. The dust thrown up by this column of the Austrian 2nd Corps was visible during the day on the southern horizon, but whatever his orders may have been, the commander took it as his object not so much to turn the French right as to watch for the approach of the Corps under Prince Napoleon.

By 10 o'clock the action had become fully engaged all along the line. Between MEDOLE and GUIDIZZOLO the French 4th and some of the 3rd Corps were opposed to the Austrian 9th Corps supported later on by the 11th; left of this but still in the plain, the French 2nd to the Austrian 3rd Corps; on the ridge, the French 1st to the Austrian 5th Corps; further north the Piedmontese to the Austrian 8th Corps, the right, 1st Division at MADONNA DELLA SCOPERTA, the left, 3rd and 5th Divisions, at SAN MARTINO.

The French line of battle ran north and south, with the right thrown back, and the left Division with the Piedmontese bending forward at nearly half a right angle, the bend being just on the ridge. The REDONE brook now separated the two allied armies. The French cavalry was between the 2nd and 4th Corps, and later on that of the Imperial Guard came up on their left. The Austrian cavalry—2nd Army—was between their 3rd and 5th Corps. That of the 1st Army had fallen to the rear after an action near MEDOLE about 7 A.M.

The battle continued thus for several hours, on the wings until evening. The French cavalry made repeated charges. The French 1st Corps moved with its first Division—FOREY—on the Cypress mound and the Tower of SOLFERINO, its second—LADMIRAULT—on the cemetery and the old castle; the latter was reinforced by the third Division—BAZAINE—the former by the second Division of the Guard supported by the first. The whole of these positions were carried by 2 P.M. The Austrian 5th Corps retired towards POZZOLENGO, the 1st to CAVRIANA.

Meanwhile the French 2nd Corps had got past SOLFERINO in the plain and at 3 P.M. carried the village of SAN CASSIANO about half way between SOLFERINO and CAVRIANA. After repulsing an Austrian counter-attack this Corps along with the Guard reached the village of CAVRIANA towards 5 P.M. by which time the Austrian Emperor had already given the order for a general retreat. The weather had lately been very dry and this day had been one of great heat. At 5 P.M. a violent duststorm followed by a heavy downpour of rain lasting half an hour swept over the field and put an end to the battle except on the extreme left of the allies.

The Piedmontese right Division—DURANDO—had dislodged the enemy from MADONNA DELLA SCOPERTA in the afternoon. The Reserve Division—FANTI—was ordered up to support the French towards SOLFERINO and CAVRIANA, but after the SOLFERINO positions had been captured the King ordered FANTI to divide his force, to take one brigade to reinforce DURANDO and to send the other to reinforce the left. On this flank BENEDEK after driving back the Piedmontese advanced troops in the morning had seized the heights of SAN MARTINO which he continued to hold until evening.

After several desperate assaults here in the forenoon by the Brigades CUNEO, CASALE, ACQUI and PINEROLO, there had occurred a long pause, but on the arrival of this reinforcement the attacks were renewed, and by 7 P.M. the whole of the SAN MARTINO positions had been carried by the united efforts of the 3rd and 5th Divisions and the AOSTA Brigade of the 2nd. By this time too the right column had made its way round and after overcoming some little resistance on the way was now nearing POZZOLENGO.

During the night the Austrian army retreated across the MINCIO, with a loss of 13,000 in killed and wounded, 6,000 prisoners and 30 guns. The villages of POZZOLENGO, VOLTA and GUIDIZZOLO were not evacuated by them till 10 P.M. The allies slept on the

ground that they had won. They had lost 17,000 in killed and wounded and 3,000 prisoners.

Various reasons have been propounded to account for the result of this battle. I shall perhaps be adding a new one in suggesting that it was virtually won by Napoleon the First. There can be no doubt that the French Emperor and his staff had studied the Italian campaigns of Napoleon I, and during the halt on the CHIESE they would have given special attention to the battles of LONATO and CASTIGLIONE. When then Napoleon III found himself unexpectedly committed to a general action on the very field of CASTIGLIONE, he probably remembered how that battle was finally decided by the capture of the Tower of SOLFERINO and opined that he could not do better than copy his uncle. The orders he gave secured the co-operation of three corps d'armée on the centre.

The French Emperor in any case decided on a definite line of action, whereas the Austrian Emperor was satisfied to let things take their course and to leave the initiative to his adversary. Had he persevered in the original plan and made a determined effort with his left, where his main strength was massed, he might have won a victory. For this the cavalry would have been wanted: the right Cavalry Division took indeed an honest share in the fight, but the conduct of the left Division was such that its commander was degraded and one of its brigadiers was awarded a long term of imprisonment in a fortress. The want of direction from headquarters was not made up for by initiation on part of the subordinate commanders. The 1st Corps failed to give due support to the 5th at SOLFERINO, and the Reserves were used not to win a victory but to cover the retreat.

It has been put forward that the French likewise would have done better to turn the Austrian left in the plain. Had they done so however the ridge stretching from SOLFERINO to beyond VOLTA would have been a formidable line for the Austrian left wing to fall back upon and from which to cover the retreat by the several points of passage across the MINCIO from VALEGGIO northwards. On the other hand, the effort on the centre if vigorously pushed might have led to more decisive results. Had the Piedmontese Reserve Division continued its march, and carried the 1st Division along with it, on CAVRIANA, the advantage here won might have been followed further. The impulse of a whole Division of fresh troops might have carried the allies on to the MINCIO near POZZOLO, in which case the Austrian left wing would have had to effect their retreat by the single bridge of GOITO. It would have been better still if the whole Piedmontese army had operated by its right nearer the French instead of fighting a battle of its own away near lake GARDA.

The field of this *bataille de rencontre* did not in fact offer the allies a good chance of a decisive victory. The Austrian right was rendered quite secure by the lake and the fortress of PESCHIERA, and as already shown an effort on their left did not promise great success. The storm in the afternoon was a lucky event for the Austrians.

The French line of battle ran north and south, with the right thrown back, and the left Division with the Piedmontese bending forward at nearly half a right angle, the bend being just on the ridge. The RESSONE brook now separated the two armed armies. The French cavalry was between the 2nd and 4th Corps, and later on that of the Imperial Guard came up on their left. The Austrian cavalry (2nd Army) was between the 3rd and 5th Corps. That of the 1st Army had fallen to the rear after an action near MEDOLE about 7 A.M.

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During the night the Austrian army retreated across the MINIO with a loss of 1,000 men killed and 6,000 prisoners and 50 guns. The villages of POZZOLENIGO, VOLTÀ and CAVRIANA were not evacuated by them till 10 P.M. The vessels left on the

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That the French success in the centre was not pushed further may be attributed partly to this and partly to the want of unity of action, unavoidable in the case of allied armies. We cannot be surprised that the French stopped at CAVRIANA when we remember that their soldiers had been already fifteen hours on their legs through a very hot day, and that their reserves had been used up, nor that the Italian King preferred to send help to his own hard-pressed troops and to capture ere night those heights for which so much blood had been already shed.

One lesson of this battle is the advantage of early rising. The French got up earlier than the Austrians and besides thus gaining the initiative, they had their coffee before marching off, while their enemy surprised in their bivouacs had to fight on empty stomachs.

In this war the French used the same formations as in the wars of the Revolution. They moved in battalion columns at deploying intervals, covered by skirmishers, and fought in deployed lines or in battalion columns of attack formed on the two centre *pelotons*. Rifle cannon were used for the first time in this campaign, but it was only the Guard Corps that had them, and in the battle of the 24th this artillery did not come into action till late in the day in the attack on CAVRIANA, so that they cannot be held to have had any substantial effect on the issue of the battle.

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On July 7th the Austrian Emperor accepted the preliminaries of peace offered by the French Emperor, and the war came to a sudden and unlooked for end.

The easiest way to visit this interesting battle-field is to take a stopping train from VERONA and to alight at S. MARTINO DELLA BATTAGLIA. This station is just at the bend in the railway and is where the principal reconnaissance of the Piedmontese left the railway line to move on POZZO FENO. They were pushed back by the advancing Austrians, who by 9 o'clock had occupied the heights of S. MARTINO before the fleeing Piedmontese had had time to camp.

These principal heights rise above the level of the railway. The fighting here continued round these points, which were taken and retaken several times during the day, the church (the present ossuary) the *rocca* on which now stands the tower, and the *Croce rossa*. The last is a white cross-house. Many years before the battle an Austrian officer serving here asked an inn-keeper the name of that house. The inn-keeper answered by telling the name of the owner—Count Trautson. Count Trautson thereupon the officer accordingly wrote down for the house that peculiar name which was destined to pass into history. The church here was a chapel belonging to the Trautson family. It as well as the *rocca* has

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Ten years after the battle (the interval required by the Italian law) all the bodies that could be found were unearthed, the bones cleaned and dried, after which they were gathered in the two ossaries of S. MARTINO and SOLFERINO. These were inaugurated by a solemn ceremony on June 24th, 1870, at which the Crown Prince HUMBERT was present and the French and Austrian Emperors were represented. The skulls are arranged on shelves in the apse behind the altar, the bones piled in the crypt below. The number of skulls here is 1,274. In the church are many inscriptions and memorials; outside, a monument to the AOSTA brigade. A service is held every year on the anniversary when some "premiums," created by the Association and worth a hundred francs a year, are drawn for by lot among the survivors of the battle or their near relatives.

The Tower is a monument to King VICTOR EMANUEL. It stands on a cylindrical drum, is all of white stone, and its total height is 245 feet. In the basement is a statue of the king and four paintings referring to his career. In the corridor we find a truly colossal work, a collection of the names of all the men who took part in any campaign connected with the formation of Italy; they are arranged by provinces and parishes, and great care was taken to keep out spurious names; the number amounts to 686,000. The Tower proper which is ascended by ramps is divided into seven tiers, in each one of which is a wall painting of some scene from the wars of modern Italy. In the first tier we find the action at GORTO in 1848, in the second the defence of the railway viaduct at VENICE in 1849, in the third the battle of the CHORNAYA in the CRIMEA, in the fourth the battle itself of S. MARTINO, in the fifth an episode in the fighting in South Italy in 1860, in the sixth the square of the 49th Regiment at VILLAFRANCA in 1866, and in the seventh the taking of Rome in 1870. This Tower is a prominent object to travellers by railway from MILAN to VENICE.

From S. MARTINO to SOLFERINO is about seven miles by cross-country roads through MADONNA DELLA SCOPERTA, and the place is then approached from the direction of the French left attack. The ruins of the castle and the adjoining parish church surrounded by a wall formed the last stronghold of the Austrians, and the defenders were made prisoners. This castle is attributed to the SCALA family of VERONA—13th and 14th centuries—and they included the old Tower as a keep. In the 16th and 17th centuries it belonged to the GONZAGA family of MANTUA. SOLFERINO was a fief, sometimes apart, sometimes joined to CASTIGLIONE. This tiny lordship at one time possessed a mint, and coined its own money. The castle fell into ruins at the end of the 18th century.

The Tower, now become so famous, was one of several built about A.D. 1000 to serve as watch-towers from which to warn the dwellers in the plains of raids on part of the hill tribes. It bore the name of "Spia d'Italia" (Italy's look-out). It is a square stone

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tower, seventy-six feet high; it had vaults underneath but the roof once fell in, and on the restoration after 1870 the *debris* were rammed down to strengthen the foundations. It now belongs to the "Association of SOLETERNO and S. MARTINO" and is a kind of museum of the battle. On the ground floor is a collection of arms, accoutrements, etc., of the three armies. Ascending by wooden ramps we come to the "Hall of the Sovereigns" where there are pictures and autographs of Napoleon III and Victor Emmanuel. These latter were the first of a collection of the signatures of all the officers present at the battle and which is kept at PAVIA. There is here, too, a large plan of the battlefield showing the movements of the troops through every stage of the struggle. From the top at a height of 550 feet above Lake GARDA one enjoys a superb view over the whole battlefield and how many other battlefields besides! On the wall is a record of the killed who on the side of the allies amounted to seven thousand.

SAN PIETRO, the Ossuary of SOUTHERNO is approached through an avenue of expressos. The church, damaged in the battle, was restored by the Association and is larger than that of S. MARTINO. Thousands of skulls are arrayed on shelves in the apse. On this grim parade, friend and foe, officer and soldier fall in in the same ranks, and one cannot distinguish a general from a private. Finding oneself confronted by this end of all the glory of war, one can enter into the feelings of the preacher who three thousand years ago cried out: "Vanity of vanities, all is vanity." In the side chapels in every available niche, and in the vaults below, bones are stacked. In one chamber are collected the curiosities; we find here the whole skeleton of an Austrian soldier who must have been nearly seven feet high and fastened to it by wire is the belt by which he was killed. The custodian is an old Piedmontese soldier who fought in the battle.

Every year on the anniversary a service is held for the dead, there is a large patriotic gathering and a display of fireworks. Italian and French. The French Consul comes from MIRA and a detachment of infantry and artillery from the garrison of MASTUA. SUFFERINO is not a very large village, with its outlying hamlets the parish has about 1,500 inhabitants. It has a good village inn. Below the parish is a station on the FERRA-MASTUA tramway, or one can drive or ride through CAVRANA, VILLA MARCONIO and VILLAFRANCA back to ALESSANDRIA.

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This made it appear as if the French meant to copy Bonaparte's action in 1796 and to turn the lines of defence of some of the Lombard rivers by crossing the Po below their confluences. As a matter of fact Napoleon III had resolved on the opposite course, to operate by the left near the Alps. This plan is said to have been recommended to him before his departure from Paris by the veteran General JOMINI, the well known military historian. This flank march from right to left was helped by railways and was carried out under cover of the Piedmontese army who held a central position and who during the operation repulsed a weak Austrian offensive at PALESIRO on the last day of May.

The French effected the passage of the TIRNO on June 3rd at TURIGO where Napoleon I crossed it on May 31st, 1800, and on June 4th they defeated the Austrians at MAGENTA. This battle was not of a decisive character, and not more than half the Austrian forces in Lombardy had taken part in it, but nevertheless their commander Count GULAY decided on a retreat to the MINCIO, fighting only a rear guard action on the 8th at MELEGNANO to cover the passage of the ADDA. This is the same as MARGNAN, the scene of the great victory of Francis I over the Swiss in 1515 after his renowned passage of the Alps.

The allied armies followed leisurely and by June 20th had reached the river CHIESE. On this same day the Emperor of Austria, who had now arrived in Italy and taken supreme command of his army, established his headquarters at VILLAFRANCA.

The Austrian forces now concentrated behind the MINCIO consisted of eight corps d'armee divided into two armies, each of four corps and a cavalry division. The first army on the left was under Count WIMPERN, and the second on the right under Count SCHLICK. The Austrian corps consisted generally of four brigades, each of seven battalions and a few squadrons of cavalry but the fifth and ninth corps had five brigades and the eighth six. Each corps formed two divisions. The two cavalry divisions had twenty four squadrons each. The total Austrian force must have been nearly if not quite a quarter of a million but from this whole large deductions must be made for the garrisons of the fortresses and towns, and there was one corps retained in the Tyrol. The force present at the battle seems to have been about 170,000.

The French army consisted of four corps d'armee and the Imperial Guard. The corps had three divisions except the Guard and the second corps which had only two. The divisions varied somewhat in strength but were generally of thirteen battalions. A cavalry division of sixteen squadrons was attached to the first and third corps and the Imperial Guard had one of twenty four squadrons. The remaining corps had a brigade only of eight squadrons. Besides these there was a little corps under Prince Napoleon the greater part of which had been in TUSCANY. After the battle of MAGENTA the Austrians withdrew whatever garrisons they had south of the Po and concentrated their whole strength in VENETIA so Prince Napoleon

after occupying Florence had made an unopposed march over the APPENNINES and was now moving to join the army accompanied by a Tuscan division, but he did not arrive in time to take part in the battle. The French strength on the CHIESE numbered about 125,000.

The Piedmontese army, on the left of the French, was formed in five divisions, each of two brigades and two battalions of BERSAGLIERI, and one cavalry division. One division—the fourth, CIALDINI'S,—had been detached to cover the left against any attack from the TYROL, and so only four divisions, about 40,000, took part in the battle. The Piedmontese were commanded by their soldier king VICTOR EMANUEL, with General LA MARMORA as chief of the staff. The total allied force engaged was then about 165,000, with four hundred guns.

Thus the armies of three nations, each commanded by its sovereign in person, were now facing one another at a distance of only two marches, and were about to engage in a great contest which was to decide the fate of Italy.

Of the country between the CHIESE and the MINCIO, the tract now separating the rival host, the leading feature is a low ridge or range of low hills, which coming down from the Alps passes by LONATO, CASTIGLIONE, SOLFERINO, CAVRIANA and VOLTA, and whose summits rise about four hundred feet above the plain. The *rocca* of SOLFERINO on which the "Tower" stands is the culminating point of the range and is six hundred and eighty feet above sea level. The ground to the east and north of this ridge is a region of low hills, with a somewhat sandy soil, except along the shore of the lake where it is flat. To the west and south of the ridge is a vast level plain.

The plains of North Italy are as a rule not suitable for cavalry, being much intersected by water-courses, and rows of fruit trees from which vines are trailed. One exception is the plain between the BORMIDA and the SCRIVIA where the battle of MARENGO was fought, another is the tract now under consideration. Between the CHIESE and the MINCIO the ground is quite open, in some places heathy and is well adapted to cavalry action.

The Austrians decided not to await attack behind the MINCIO but to take the counter-offensive. They seem to have expected to find the enemy still on the CHIESE and their plan was to turn the right of the French, drive them from their line of communications and force the allied army into the Alps. With this view they made the following movements on June 23rd.

2nd Army.

VIII Corps	BENEDEK	by	SALONZE	on	POZZOLENGO.
V "	STADION	"	VALEGGIO	"	SOLFERINO.
I "	CLAM-GALLAS	"	do.	"	CAVRIANA.
Cavy. Divn.	MENSDOFF	"	FERRI *	"	do.
VII Corps	ZOBEL	"	do.	"	VOLTA in reserve.

* About a mile below Pozzolo.

1st Army.				
III Corps	SCHWARZENBERG	by TERRE	on GUDIZZOLO.	
IX "	SCHLAGGISCHE	" GORTO	" do	
Cava Divn.	ZIDNITZ	" do	" Extreme left	
XI Corps	WIEGL	" do	" CASTEL GRIMALDO	
				in reserve.

II Corps LICHTENSTEIN was to send one Division from MANTUA towards MARGARIA to threaten the enemy's right and to watch a Division of Prince Napoleon's Corps under AUTEMARE which had not followed the Prince to TUSCANO but had marched down the Po in rear of the main army and was now nearing CREMONA. Leaving out this Division of Corps II, the front of the Austrian army was about fifteen miles.

The fifth Corps at SOLFERINO occupied the most advanced and most important position. The *rocca* with its Tower has been already mentioned as the highest spot in the countryside: about six hundred yards in front is a mound grown over with cypresses; a little to the right are the remains of an old castle with the parish church, and in front of this about level with the cypress mound is the cemetery. These four points were the scene of the hardest fighting next day. To the right rear was S. PIETRO, the present "Ossuary" where the Austrians placed a battery. The village of SOLFERINO lies in a hollow behind the *rocca*. The hamlets of Pozzo CATENA and STAFFALO lie to the front near the cypress mound and the cemetery. The Emperor's headquarters were at CAVRIANA. It was intended to continue the forward movement next day.

In the meanwhile the allied armies had in part crossed the CHIESE and on the evening of the 23rd were in the following position:-

IV Corps	NIEL	at CARPENEDOLO
2 Cava Divn.	"	do.
III Corps	CANROBERT	on right bank of CHIESE
II "	M. MAHON	at CASTIGLIONE
I "	BARAGAY D'HILLERS	N. of CASTIGLIONE.

Genl. St. JEAN D'ANGELY at MONTICHIARI in reserve.

Piedmontese 4 Divisions about LONATO and DESANZANO.

The French Emperor's headquarters were at MONTICHIARI. The allies did not expect to find the enemy in any force this side of the Mincio, and the army was to advance next day.

III Corps	on Mincio
IV "	and Cavalry
II "	GUDIZZOLO
I "	CAVRIANA
Guard	SOLFERINO

Genl. CASTIGLIONE

Piedmontese

Pozzo CATENA

1st Divn. DELFANTO

3rd " M. MAHON

5th " CUCCHIARI

by an m. and road
by the low country near the lake.

Each of these three Divisions was to throw forward a strong reconnaissance.

The 2nd Division—**FANTI**—was to remain near **LOXATO** in reserve.

Both sides had numerous cavalry but they were not used for reconnoitring on a large scale. On the night of the 23rd, the outposts were within a short distance of one another on a wide front, but neither army was aware of the close presence of the other. From the above situation it is evident that a conflict must occur as soon as either army should move forward.

The French troops rose early from their bivouacs on the morning of June 24th, some as early as two o'clock. At 5 A.M. the advanced guards of the 1st and 2nd Corps came upon the Austrian outposts a little beyond **CASTIGLIONE**, the former on the ridge, the latter on the plain. By 7 A.M. all the columns had come into contact with the enemy: at this hour the—

III Corps was at **CASTEL GOFFREDO**.

IV do. " " **MEDOLE**.

II do. " " about 3 miles beyond **CASTIGLIONE**.

I do. " " 2 " "

The Piedmontese advanced troops, right, beyond **VENZAGO**.

" " left, " **S. MARTINO**.

The Reserves had not moved.

The firing in the early morning came as a surprise to the soldiers of the allied armies, but as the rattle of musketry and the roar of cannon spread outwards from the centre to the wings in ever increasing intensity, all must have felt that they were about to engage in a great battle.

At 8 o'clock at **CASTIGLIONE** the Emperor received such reports from his Corps commanders as to leave no doubt that it was not, as he had at first supposed, a reconnaissance in force, but the whole Austrian army that he had before him. He decided to make his main effort on the centre, and ordered the infantry of the Guard to follow the 1st Corps, the Cavalry the 2nd, directing the troops on the right and left of these to converge inwards. Shortly after this he sent directions to **CANROBERT** commanding the 3rd Corps to look out for a large force reported to have left **MANTUA** the day before. The dust thrown up by this column of the Austrian 2nd Corps was visible during the day on the southern horizon, but whatever his orders may have been, the commander took it as his object not so much to turn the French right as to watch for the approach of the Corps under Prince Napoleon.

By 10 o'clock the action had become fully engaged all along the line. Between **MEDOLE** and **GUIDIZZOLO** the French 4th and some of the 3rd Corps were opposed to the Austrian 9th Corps supported later on by the 11th; left of this but still in the plain, the French 2nd to the Austrian 3rd Corps; on the ridge, the French 1st to the Austrian 5th Corps; further north the Piedmontese to the Austrian 8th Corps, the right, 1st Division at **MAIDONNA DELLA SCOPERTA**, the left, 3rd and 5th Divisions, at **SAN MARTINO**.

The French line of battle ran north and south, with the right thrown back, and the left Division with the Piedmontese bending forward at nearly half a right angle, the bend being just on the ridge. The REDONE brook now separated the two allied armies. The French cavalry was between the 2nd and 4th Corps, and later on that of the Imperial Guard came up on their left. The Austrian cavalry—2nd Army—was between their 3rd and 5th Corps. That of the 1st Army had fallen to the rear after an action near MEDOLE about 7 A.M.

The battle continued thus for several hours, on the wings until evening. The French cavalry made repeated charges. The French 1st Corps moved with its first Division—FOREY—on the Cypress mound and the Tower of SOLFERINO, its second—LADMIRALLET—on the cemetery and the old castle; the latter was reinforced by the third Division—BAZAINE—the former by the second Division of the Guard supported by the first. The whole of these positions were carried by 2 P.M. The Austrian 5th Corps retired towards POZZOLENGO, the 1st to CAVRIANA.

Meanwhile the French 2nd Corps had got past SOLFERINO in the plain and at 3 P.M. carried the village of SAN CASSIANO about half way between SOLFERINO and CAVRIANA. After repulsing an Austrian counter attack this Corps along with the Guard reached the village of CAVRIANA towards 5 P.M. by which time the Austrian Emperor had already given the order for a general retreat. The weather had lately been very dry and this day had been one of great heat. At 5 P.M. a violent dust-storm followed by a heavy downpour of rain lasting half an hour swept over the field and put an end to the battle except on the extreme left of the allies.

The Piedmontese right Division—DURANDO—had dislodged the enemy from MADONNA DELLA SCOPERTA in the afternoon. The Reserve Division—FANTU—was ordered up to support the French towards SOLFERINO and CAVRIANA but after the SOLFERINO positions had been captured the King ordered FANTU to divide his force, to take one brigade to reinforce DURANDO and to send the other to reinforce the left. On this flank BENSCHKE after driving back the Piedmontese advanced troops in the morning had seized the heights of SAN MARTINO which he continued to hold until evening.

After several desperate assaults here in the forenoon by the Brigades CUSIO, CASALE, AOSTA and PINEROLO there had occurred a long pause, but on the arrival of this reinforcement the attacks were renewed and by 7 P.M. the whole of the SAN MARTINO positions had been carried by the united efforts of the 3rd and 5th Divisions and the AOSTA brigade of the 2nd. By this time too the right column had made its way round and after overcoming some little resistance on the way was now nearing POZZOLENGO.

During the night the Austrian army retreated across the MEXIO with a loss of 14,000 men killed and 6,000 prisoners and 30 guns. The villages of POZZOLENGO, VOLTÀ and GEMIGNOLO were not evacuated by them till 10 P.M. The axes slept on the

ground that they had won. They had lost 17,000 in killed and wounded and 3,000 prisoners.

Various reasons have been propounded to account for the result of this battle. I shall perhaps be adding a new one in suggesting that it was virtually won by Napoleon the First. There can be no doubt that the French Emperor and his staff had studied the Italian campaigns of Napoleon I, and during the halt on the CHIESE they would have given special attention to the battles of LONATO and CASTIGLIONE. When then Napoleon III found himself unexpectedly committed to a general action on the very field of CASTIGLIONE, he probably remembered how that battle was finally decided by the capture of the Tower of SOLFERINO and opined that he could not do better than copy his uncle. The orders he gave secured the co-operation of three corps d'armée on the centre.

The French Emperor in any case decided on a definite line of action, whereas the Austrian Emperor was satisfied to let things take their course and to leave the initiative to his adversary. Had he persevered in the original plan and made a determined effort with his left, where his main strength was massed, he might have won a victory. For this the cavalry would have been wanted: the right Cavalry Division took indeed an honest share in the fight, but the conduct of the left Division was such that its commander was degraded and one of its brigadiers was awarded a long term of imprisonment in a fortress. The want of direction from headquarters was not made up for by initiation on part of the subordinate commanders. The 1st Corps failed to give due support to the 5th at SOLFERINO, and the Reserves were used not to win a victory but to cover the retreat.

It has been put forward that the French likewise would have done better to turn the Austrian left in the plain. Had they done so however the ridge stretching from SOLFERINO to beyond VOLTA would have been a formidable line for the Austrian left wing to fall back upon and from which to cover the retreat by the several points of passage across the MINCIO from VALEGGIO northwards. On the other hand, the effort on the centre if vigorously pushed might have led to more decisive results. Had the Piedmontese Reserve Division continued its march, and carried the 1st Division along with it, on CAVRIANA, the advantage here won might have been followed further. The impulse of a whole Division of fresh troops might have carried the allies on to the MINCIO near POZZOLO, in which case the Austrian left wing would have had to effect their retreat by the single bridge of GORTO. It would have been better still if the whole Piedmontese army had operated by its right nearer the French instead of fighting a battle of its own away near lake GARDA.

The field of this *bataille de rencontre* did not in fact offer the allies a good chance of a decisive victory. The Austrian right was rendered quite secure by the lake and the fortress of PESCHIERA, and as already shown an effort on their left did not promise great success. The storm in the afternoon was a lucky event for the Austrians.

That the French success in the centre was not pushed further may be attributed partly to this and partly to the want of unity of action, unavoidable in the case of allied armies. We cannot be surprised that the French stopped at CAVRIANA when we remember that their soldiers had been already fifteen hours on their legs through a very hot day, and that their reserves had been used up, nor that the Italian King preferred to send help to his own hard-pressed troops and to capture ere night those heights for which so much blood had been already shed.

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These principal heights rise about a hundred feet above the railway. The fighting here centred round three points, which were taken and retaken several times during the day: the church (the present ossuary), the *rocca* on which now stands the Tower, and the *Croce di Ferro*. The last is a country house. Many years before the battle an Austrian officer serving here asked an inhabitant the name of that house; the first answer was given by telling the name of the owner, "Count Tracagniotti and Tracagniotti-Borsari," the officer accordingly wrote down for the house that peculiar name which was destined to pass into history. The church was a chapel belonging to the Tracagniotti family. It as well as the *rocca* has

now been acquired by the "Association of SOLFERINO and SAN MARTINO."

Ten years after the battle (the interval required by the Italian law) all the bodies that could be found were unearched, the bones cleaned and dried, after which they were gathered in the two ossaries of S. MARTINO and SOLFERINO. These were inaugurated by a solemn ceremony on June 24th, 1870, at which the Crown Prince HUMBERT was present and the French and Austrian Emperors were represented. The skulls are arranged on shelves in the apse behind the altar, the bones piled in the crypt below. The number of skulls here is 1,274. In the church are many inscriptions and memorials; outside, a monument to the AOSTA brigade. A service is held every year on the anniversary when some "premiums," created by the Association and worth a hundred francs a year, are drawn for by lot among the survivors of the battle or their near relatives.

The Tower is a monument to King VICTOR EMANUEL. It stands on a cylindrical drum, is all of white stone, and its total height is 245 feet. In the basement is a statue of the king and four paintings referring to his career. In the corridor we find a truly colossal work, a collection of the names of all the men who took part in any campaign connected with the formation of Italy; they are arranged by provinces and parishes, and great care was taken to keep out spurious names; the number amounts to 686,000. The Tower proper which is ascended by ramps is divided into seven tiers, in each one of which is a wall painting of some scene from the wars of modern Italy. In the first tier we find the action at GORTO in 1848, in the second the defence of the railway viaduct at VENICE in 1849, in the third the battle of the CHORNAYA in the CRIMEA, in the fourth the battle itself of S. MARTINO, in the fifth an episode in the fighting in South Italy in 1860, in the sixth the square of the 49th Regiment at VILLAFRANCA in 1866, and in the seventh the taking of Rome in 1870. This Tower is a prominent object to travellers by railway from MILAN to VENICE.

From S. MARTINO to SOLFERINO is about seven miles by cross-country roads through MADONNA DELLA SCOPERTA, and the place is then approached from the direction of the French left attack. The ruins of the castle and the adjoining parish church surrounded by a wall formed the last stronghold of the Austrians, and the defenders were made prisoners. This castle is attributed to the SCALA family of VERONA—13th and 14th centuries—and they included the old Tower as a keep. In the 16th and 17th centuries it belonged to the GONZAGA family of MANTUA. SOLFERINO was a fief, sometimes apart, sometimes joined to CASTIGLIONE. This tiny lordship at one time possessed a mint, and coined its own money. The castle fell into ruins at the end of the 18th century.

The Tower, now become so famous, was one of several built about A.D. 1000 to serve as watch-towers from which to warn the dwellers in the plains of raids on part of the hill tribes. It bore the name of "Spia d'Italia" (Italy's look-out). It is a square stone

tower, seventy-six feet high: it had vaults underneath but the roof once fell in, and on the restoration after 1870 the *debris* were rammed down to strengthen the foundations. It now belongs to the "Association of SOLEFFRINO and S. MARTINO" and is a kind of museum of the battle. On the ground floor is a collection of arms, accoutrements, etc., of the three armies. Ascending by wooden ramps we come to the "Hall of the Sovereigns" where there are pictures and autographs of Napoleon III and Victor Emanuel. These latter were the first of a collection of the signatures of all the officers present at the battle and which is kept at PAVIA. There is here, too, a large plan of the battlefield showing the movements of the troops through every stage of the struggle. From the top at a height of 550 feet above Lake GARDA one enjoys a superb view over the whole battlefield and how many other battlefields besides. On the wall is a record of the killed who on the side of the allies amounted to seven thousand.

SAN PIETRO, the Ossuary of SOLEFFRINO, is approached through an avenue of expressos. The church, damaged in the battle, was restored by the Association and is larger than that of S. MARTINO. Thousands of skulls are arranged on shelves in the apse. On this grim parade friend and foe, officer and soldier fall in in the same ranks, and one cannot distinguish a general from a private. Finding oneself confronted by this end of all the glory of war, one can enter into the feelings of the preacher who three thousand years ago cried out, "Vanity of vanities, all is vanity." In the side chapels in every available niche and in the vaults below bones are stacked. In one chamber are collected the curiosities, we find here the whole skeleton of an Austrian soldier who must have been nearly seven feet high and fastened to it by wire is the bullet by which he was killed. The custodian is an old Piedmontese soldier who fought in the battle.

Every year on the anniversary a service is held for the dead, there is a large patriotic gathering and display of tricolours Italian and French. The French Consul comes from MILAN and a detachment of infantry and artillery from the garrison of MANTUA. SOLEFFRINO is not a very large village, with its outlying hamlets the parish has about 1500 inhabitants, it has a good village inn. Below in the plain is a station of the INFESTA MANTUA tramway, or one can drive or ride through CAVRIANA, VOLTA MARCONIO, and VILLAFRANCA back to VERONA.

There is probably no place so near to a centre from which a greater number of objects of military interest can be visited than from VERONA. The roads are good and excellent, the accommodation good and very moderate in price. A most enjoyable week is spent here by a military traveller who can pick up interesting sights and pretty scenery and history, while he views for the best of the four pages of the great Napoleonic campaign the most dramatic part of it first hand and the ever and perpetually changing pictures of a most interesting military events that led to the final victory of June 4th.

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This made it appear as if the French meant to copy Bonaparte's action in 1796 and to turn the lines of defence of some of the Lombard rivers by crossing the Po below their confluences. As a matter of fact Napoleon III had resolved on the opposite course, to operate by the left near the Alps. This plan is said to have been recommended to him before his departure from Paris by the veteran General JOMINI, the well known military historian. This flank march from right to left was helped by railways and was carried out under cover of the Piedmontese army who held a central position and who during the operation repulsed a weak Austrian offensive at PALESTRO on the last day of May.

The French effected the passage of the TICINO on June 3rd at TURIGO where Napoleon I crossed it on May 31st, 1800, and on June 4th they defeated the Austrians at MAGENTA. This battle was not of a decisive character, and not more than half the Austrian forces in Lombardy had taken part in it, but nevertheless their commander Count GUTLEY decided on a retreat to the MINCIO, fighting only a rear guard action on the 8th at MELIGNANO to cover the passage of the ADDA. This is the same as MARIANO, the scene of the great victory of Francis I over the Swiss in 1515 after his renowned passage of the Alps.

The allied armies followed leisurely and by June 20th had reached the river CHIOSSA. On this same day the Emperor of Austria, who had now arrived in Italy and taken supreme command of his army, established his headquarters at VILLAFRANCA.

The Austrian forces now concentrated behind the MINCIO consisted of eight corps d'armée divided into two armies each of four corps and a cavalry division. The first army on the left was under Count WIMPFFEN, and the second on the right under Count SCHLICK. The Austrian corps consisted generally of four brigades, each of seven battalions, and a few squadrons of cavalry but the fifth and ninth corps had five brigades and the eighth six. Each corps formed two divisions. The two cavalry divisions had twenty four squadrons each. The total Austrian force must have been nearly if not quite a quarter of a million but from this whole large deduction must be made for the garrisons of the fortresses and towns, and there was one corps retained in the Tyrol. The force present at the battle seems to have been about 170,000.

The French army consisted of four corps d'armée and the Imperial Guard. The corps had three divisions except the Guard and the second corps which had only two. The divisions varied somewhat in strength but were generally of thirteen battalions. A cavalry division of sixteen squadrons was attached to the first and third corps and the Imperial Guard had twenty four squadrons. The remaining corps had a brigade of twenty eight squadrons. Besides these there was a fifth corps under Prince Napoleon in the greater part of which had debarked in TUSCANY. After the battle of MAGENTA the Austrians withdrew whatever garrisons they had south of the Po and concentrated their whole strength in VENETIA so Prince Napoleon

after occupying Florence had made an unopposed march over the APPENNINES and was now moving to join the army accompanied by a Tuscan division, but he did not arrive in time to take part in the battle. The French strength on the CHIESE numbered about 125,000.

The Piedmontese army, on the left of the French, was formed in five divisions, each of two brigades and two battalions of BERSAGLIERI, and one cavalry division. One division—the fourth, CIALDINI'S,—had been detached to cover the left against any attack from the TYROL, and so only four divisions, about 40,000, took part in the battle. The Piedmontese were commanded by their soldier king VICTOR EMANUEL, with General LA MARMORA as chief of the staff. The total allied force engaged was then about 165,000, with four hundred guns.

Thus the armies of three nations, each commanded by its sovereign in person, were now facing one another at a distance of only two marches, and were about to engage in a great contest which was to decide the fate of Italy.

Of the country between the CHIESE and the MINCIO, the tract now separating the rival host, the leading feature is a low ridge or range of low hills, which coming down from the Alps passes by LONATO, CASTIGLIONE, SOLFERINO, CAVRIANA and VOLTA, and whose summits rise about four hundred feet above the plain. The *rocca* of SOLFERINO on which the "Tower" stands is the culminating point of the range and is six hundred and eighty feet above sea level. The ground to the east and north of this ridge is a region of low hills, with a somewhat sandy soil, except along the shore of the lake where it is flat. To the west and south of the ridge is a vast level plain.

The plains of North Italy are as a rule not suitable for cavalry, being much intersected by water-courses, and rows of fruit trees from which vines are trailed. One exception is the plain between the BORMIDA and the SCRIVIA where the battle of MARENGO was fought, another is the tract now under consideration. Between the CHIESE and the MINCIO the ground is quite open, in some places heathy and is well adapted to cavalry action.

The Austrians decided not to await attack behind the MINCIO but to take the counter-offensive. They seem to have expected to find the enemy still on the CHIESE and their plan was to turn the right of the French, drive them from their line of communications and force the allied army into the Alps. With this view they made the following movements on June 23rd.

2nd Army.

VIII Corps	BENEDEK	by	SALIONZE	on	POZZOLENGO.
V "	STADION	"	VALEGGIO	"	SOLFERINO.
I "	CLAM-GALLAS	"	do.	"	CAVRIANA.
Cavy. Divn.	MENSDOFF	"	FERRI *	"	do.
VII Corps	ZOBEL	"	do.	"	VOLTA in reserve.

* About a mile below Pozzolo.

1st Army.				
III Corps	SCHWARZENBERG	by TERRI	on GUDIZZOLO.	
IX "	SCHAFGOISCHE	" GOTTO	" do	
Cava Divn.	ZEDNITZ	" do	" Extreme left.	
XI Corps	WIEGL	" do	" CASTELGRIMALDO	in reserve.

II Corps LICHTENSTEIN was to send one Division from MANTUA towards MARGHERA to threaten the enemy's right and to watch a Division of Prince Napoleon's Corps under AUTEMARE which had not followed the Prince to TREVISO but had marched down the Po in rear of the main army and was now nearing CRIMONA. Leaving out this Division of Corps II the front of the Austrian army was about fifteen miles.

The fifth Corps at SOLEFFERINO occupied the most advanced and most important position. The *rocca* with its Tower has been already mentioned as the highest spot in the countryside: about six hundred yards in front is a mound grown over with cypresses, a little to the right are the remains of an old castle with the parish church, and in front of this about level with the cypress mound is the cemetery. These four points were the scene of the hardest fighting next day. To the right rear was S. PIETRO, the present "Ossary" where the Austrians placed a battery. The village of SOLEFFERINO lies in a hollow behind the *rocca*. The hamlets of POZZO CATENA and STAFFALO lie to the front near the cypress mound and the cemetery. The Emperor's headquarters were at CAVRIANA. It was intended to continue the forward movement next day.

In the meanwhile the allied armies had in part crossed the CHISE and on the evening of the 23rd were in the following position:

IV Corps	NIEL	at CARPENEDOLO
2 Cava Divn.	"	do.
III Corps	CASROBERT	on right bank of CHISE
II "	McMAHON	at CASTIGLIONE
I "	BARAGUAY D'HILLERS	N. of CASTIGLIONE.

Guard " ST. JEAN D'ANGELEY at MONTEHEAR (in reserve)
Piedmontese 4 Divisions about IZONATO and DISENZANO.

The French Emperor's headquarters were at MONTEHEAR. The allies did not expect to find the enemy in any force this side of the MINO, and the army was to advance next day.

III Corps	on MEDOLE
IV "	and Cavalry
II "	GUDIZZOLO
I "	CAVRIANA
I "	SOLEFFERINO
Guard	CASTIGLIONE.
Piedmontese	POZZOLENGO

1st Divn. TURANICO by an inland road

3rd " MOLLAR } by the low country near the lake.

5th " CUCCHIATI }

Each of these three Divisions was to throw forward a strong reconnaissance.

The 2nd Division—FANTI—was to remain near LONATO in reserve.

Both sides had numerous cavalry but they were not used for reconnoitring on a large scale. On the night of the 23rd, the outposts were within a short distance of one another on a wide front, but neither army was aware of the close presence of the other. From the above situation it is evident that a conflict must occur as soon as either army should move forward.

The French troops rose early from their bivouacs on the morning of June 24th, some as early as two o'clock. At 5 A.M. the advanced guards of the 1st and 2nd Corps came upon the Austrian outposts a little beyond CASTIGLIONE, the former on the ridge, the latter on the plain. By 7 A.M. all the columns had come into contact with the enemy : at this hour the—

III Corps was at CASTEL GOFFREDO.

IV do. „ „ MEDOLE.

II do. „ „ about 3 miles beyond CASTIGLIONE.

I do „ „ 2 „ „

The Piedmontese advanced troops, right, beyond VENZAGO.

„ „ „ left, „ S. MARTINO.

The Reserves had not moved

The firing in the early morning came as a surprise to the soldiers of the allied armies, but as the rattle of musketry and the roar of cannon spread outwards from the centre to the wings in ever increasing intensity, all must have felt that they were about to engage in a great battle.

At 8 o'clock at CASTIGLIONE the Emperor received such reports from his Corps commanders as to leave no doubt that it was not, as he had at first supposed, a reconnaissance in force, but the whole Austrian army that he had before him. He decided to make his main effort on the centre, and ordered the infantry of the Guard to follow the 1st Corps, the Cavalry the 2nd, directing the troops on the right and left of these to converge inwards. Shortly after this he sent directions to CANROBERT commanding the 3rd Corps to look out for a large force reported to have left MANTUA the day before. The dust thrown up by this column of the Austrian 2nd Corps was visible during the day on the southern horizon, but whatever his orders may have been, the commander took it as his object not so much to turn the French right as to watch for the approach of the Corps under Prince Napoleon.

By 10 o'clock the action had become fully engaged all along the line. Between MEDOLE and GUIDIZZOLO the French 4th and some of the 3rd Corps were opposed to the Austrian 9th Corps supported later on by the 11th ; left of this but still in the plain, the French 2nd to the Austrian 3rd Corps ; on the ridge, the French 1st to the Austrian 5th Corps ; further north the Piedmontese to the Austrian 8th Corps, the right, 1st Division at MADONNA DELLA SCOPERTA, the left, 3rd and 5th Divisions, at SAN MARTINO.

The French line of battle ran north and south, with the right thrown back, and the left Division with the Piedmontese bending forward at nearly half a right angle, the bend being just on the ridge. The REDONE brook now separated the two allied armies. The French cavalry was between the 2nd and 4th Corps, and later on that of the Imperial Guard came up on their left. The Austrian cavalry—2nd Army—was between their 3rd and 5th Corps. That of the 1st Army had fallen to the rear after an action near MEDOLE about 7 A.M.

The battle continued thus for several hours, on the wings until evening. The French cavalry made repeated charges. The French 1st Corps moved with its first Division—FOREY—on the Cypress mound and the Tower of SOLFERINO, its second—LADMIRALTI—on the cemetery and the old castle, the latter was reinforced by the third Division—BAZAINE—the former by the second Division of the Guard supported by the first. The whole of these positions were carried by 2 P.M. The Austrian 5th Corps retired towards POZZOLENGO, the 1st to CAVRIANA.

Meanwhile the French 2nd Corps had got past SOLFERINO in the plain and at 3 P.M. carried the village of SAN CASSIANO about half way between SOLFERINO and CAVRIANA. After repulsing an Austrian counter attack this Corps along with the Guard reached the village of CAVRIANA towards 5 P.M. by which time the Austrian Emperor had already given the order for a general retreat. The weather had lately been very dry and the day had been one of great heat. At 5 P.M. a violent dust-storm followed by a heavy down-pour of rain lasting half an hour swept over the field and put an end to the battle except on the extreme left of the lines.

The Piedmontese right Division—DURANDO—had dislodged the enemy from MADONNA DELLA SCOPERTA in the afternoon. The Reserve Division—FANTI—was ordered up to support the French towards SOLFERINO and CAVRIANA but after the SOLFERINO position had been captured the King ordered FANTI to divide his force to take one brigade to reinforce DURANDO and to send the other to reinforce the left. On this flank D'ESNECK after driving back the Piedmontese advanced troops in the morning had seized the heights of SAN MARTINO which he continued to hold until evening.

After several desperate assaults here in the afternoon by the Brigades CUSTO, CASALE AGUET and PINEROLO there had occurred a long pause but on the arrival of this reinforcement the attacks were renewed and by 7 P.M. the whole of the SAN MARTINO positions had been carried by the united efforts of the 3rd and 5th Divisions and the Austria brigade of the 2nd. By this time too the right column had made its way round and after covering some little resistance on the way was now nearing POZZOLENGO.

During the night the Austrians were retreated across the MISO with a loss of 14000 men, 14000 prisoners and 6000 prisoners and 30 guns. The villages of POZZOLENGO, VOTTA and GEMAZZANO were not recovered by them till 10 P.M. The allies slept on the

ground that they had won. They had lost 17,000 in killed and wounded and 3,000 prisoners.

Various reasons have been propounded to account for the result of this battle. I shall perhaps be adding a new one in suggesting that it was virtually won by Napoleon the First. There can be no doubt that the French Emperor and his staff had studied the Italian campaigns of Napoleon I, and during the halt on the CHIESE they would have given special attention to the battles of LONATO and CASTIGLIONE. When then Napoleon III found himself unexpectedly committed to a general action on the very field of CASTIGLIONE, he probably remembered how that battle was finally decided by the capture of the Tower of SOLFERINO and opined that he could not do better than copy his uncle. The orders he gave secured the co-operation of three corps d'armée on the centre.

The French Emperor in any case decided on a definite line of action, whereas the Austrian Emperor was satisfied to let things take their course and to leave the initiative to his adversary. Had he persevered in the original plan and made a determined effort with his left, where his main strength was massed, he might have won a victory. For this the cavalry would have been wanted: the right Cavalry Division took indeed an honest share in the fight, but the conduct of the left Division was such that its commander was degraded and one of its brigadiers was awarded a long term of imprisonment in a fortress. The want of direction from headquarters was not made up for by initiation on part of the subordinate commanders. The 1st Corps failed to give due support to the 5th at SOLFERINO, and the Reserves were used not to win a victory but to cover the retreat.

It has been put forward that the French likewise would have done better to turn the Austrian left in the plain. Had they done so however the ridge stretching from SOLFERINO to beyond VOLTA would have been a formidable line for the Austrian left wing to fall back upon and from which to cover the retreat by the several points of passage across the MINCIO from VALEGGIO northwards. On the other hand, the effort on the centre if vigorously pushed might have led to more decisive results. Had the Piedmontese Reserve Division continued its march, and carried the 1st Division along with it, on CAVRIANA, the advantage here won might have been followed further. The impulse of a whole Division of fresh troops might have carried the allies on to the MINCIO near POZZOLO, in which case the Austrian left wing would have had to effect their retreat by the single bridge of GORTO. It would have been better still if the whole Piedmontese army had operated by its right nearer the French instead of fighting a battle of its own away near lake GARDA.

The field of this *bataille de rencontre* did not in fact offer the allies a good chance of a decisive victory. The Austrian right was rendered quite secure by the lake and the fortress of PESCHIERA, and as already shown an effort on their left did not promise great success. The storm in the afternoon was a lucky event for the Austrians.

That the French success in the centre was not pushed further may be attributed partly to this and partly to the want of unity of action, unavoidable in the case of allied armies. We cannot be surprised that the French stopped at CAVRIANA when we remember that their soldiers had been already fifteen hours on their legs through a very hot day, and that their reserves had been used up, nor that the Italian King preferred to send help to his own hard pressed troops and to capture ere night those heights for which so much blood had been already shed.

One lesson of this battle is the advantage of early rising. The French got up earlier than the Austrians and besides thus gaining the initiative, they had their coffee before marching off, while their enemy surprised in their bivouacs had to fight on empty stomachs.

In this war the French used the same formations as in the wars of the Revolution. They moved in battalion columns at deploying intervals, covered by skirmishers, and fought in deployed lines or in battalion columns of attack formed on the two centre *pelotons*. Rifle cannon were used for the first time in this campaign, but it was only the Guard Corps that had them; and in the battle of the 24th this artillery did not come into action till late in the day in the attack on CAVRIANA, so that they cannot be held to have had any substantial effect on the issue of the battle.

The Austrian army retired on VERONA. A week after the battle the French crossed the MINCIO and occupied positions beyond it. The Piedmontese undertook the siege of PESCHIERA which they had taken eleven years before: to help this five gunboats were brought in pieces by railway from France and were to be put together on the lake.

On July 7th the Austrian Emperor accepted the preliminaries of peace offered by the French Emperor, and the war came to a sudden and unlooked-for end.

The easiest way to visit this interesting battlefield is to take a stopping train from VERONA and to alight at S. MARTINO DELLA BATTAGLIA. This station is just at the bend in the railway and is where the principal reconnaissance of the Piedmontese left the railway line to move on POZZOLENGO. They were pushed back by the advancing Austrians who by 9 o'clock had occupied the heights of SAN MARTINO before the leading Piedmontese brigade had come up.

These pine clad heights rise about a hundred feet above the railway. The fighting here centred round three points, which were taken and retaken several times during the day, the church (the present ossuary), the *roccolo* on which now stands the Tower, and the *Contraccania*. The last is a country-house. Many years before the battle an Austrian officer surveying here asked an inhabitant the name of that house; the rustic answered by telling the name of the owner—"Count Tracagni" (Count TRACAGNI of BRESCIA); the officer accordingly wrote down for the house that peculiar name which was destined to pass into history. The "church" was a chapel belonging to the TRACAGNI family. It as well as the *roccolo* has

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Ten years after the battle (the interval required by the Italian law) all the bodies that could be found were unearthed, the bones cleaned and dried, after which they were gathered in the two ossaries of S. MARTINO and SOLFERINO. These were inaugurated by a solemn ceremony on June 24th, 1870, at which the Crown Prince HUMBERT was present and the French and Austrian Emperors were represented. The skulls are arranged on shelves in the apse behind the altar, the bones piled in the crypt below. The number of skulls here is 1,274. In the church are many inscriptions and memorials; outside, a monument to the AOSTA brigade. A service is held every year on the anniversary when some "premiums," created by the Association and worth a hundred francs a year, are drawn for by lot among the survivors of the battle or their near relatives.

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From S. MARTINO to SOLFERINO is about seven miles by cross-country roads through MADONNA DELLA SCOPERTA, and the place is then approached from the direction of the French left attack. The ruins of the castle and the adjoining parish church surrounded by a wall formed the last stronghold of the Austrians, and the defenders were made prisoners. This castle is attributed to the SCALA family of VERONA—13th and 14th centuries—and they included the old Tower as a keep. In the 16th and 17th centuries it belonged to the GONZAGA family of MANTUA. SOLFERINO was a fief, sometimes apart, sometimes joined to CASTIGLIONE. This tiny lordship at one time possessed a mint, and coined its own money. The castle fell into ruins at the end of the 18th century.

The Tower, now become so famous, was one of several built about A.D. 1000 to serve as watch-towers from which to warn the dwellers in the plains of raids on part of the hill tribes. It bore the name of "Spia d'Italia" (Italy's look-out). It is a square stone

tower, seventy-six feet high: it had vaults underneath but the roof once fell in, and on the restoration after 1870 the *débris* were rammed down to strengthen the foundations. It now belongs to the "Association of SOLFERINO and S. MARTINO" and is a kind of museum of the battle. On the ground floor is a collection of arms, accoutrements, etc., of the three armies. Ascending by wooden ramps we come to the "Hall of the Sovereigns" where there are pictures and autographs of Napoleon III and Victor Emanuel. These latter were the first of a collection of the signatures of all the officers present at the battle and which is kept at PADUA. There is here, too, a large plan of the battlefield showing the movements of the troops through every stage of the struggle. From the top at a height of 550 feet above Lake GARDA one enjoys a superb view over the whole battlefield, and how many other battlefields besides! On the wall is a record of the killed who on the side of the allies amounted to seven thousand.

SAN PIETRO, the Ossuary of SOLFERINO, is approached through an avenue of cypresses. The church, damaged in the battle, was restored by the Association, and is larger than that of S. MARTINO. Thousands of skulls are arrayed on shelves in the apse. On this grim parade, friend and foe, officer and soldier fall in in the same ranks, and one cannot distinguish a general from a private. Finding oneself confronted by this end of all the glory of war, one can enter into the feelings of the preacher who three thousand years ago cried out—"Vanity of vanities; all is vanity". In the side chapels, in every available niche and in the vaults below, bones are stacked. In one chamber are collected the curiosities; we find here the whole skeleton of an Austrian soldier who must have been nearly seven feet high and fastened to it by wire is the bullet by which he was killed. The custodian is an old Piedmontese soldier who fought in the battle.

Every year on the anniversary a service is held for the dead; there is a large patriotic gathering, and a display of tricolours, Italian and French. The French Consul comes from MILAN and a detachment of infantry and artillery from the garrison of MANTUA. SOLFERINO is not a very large village; with its outlying hamlets the parish has about 1,500 inhabitants; it has a good village inn. Below in the plain is a station of the BRESCIA-MANTUA tramway or one can drive or ride through CAVRIANA, VOLTA, VALEGGIO and VILLAFRANCA back to VERONA.

There is probably in all Europe no centre from which a greater number of objects of military interest can be visited than from VERONA. The roads are plentiful and excellent, the accommodation good and very moderate in price. A month could be well spent here by a military traveller, who in pleasant surroundings and pretty scenery could study what many consider the best of the campaigns of the great Napoleon, the ancient and modern art of fortification, and the later and perhaps less instructive but still highly interesting military events that led to the making of modern Italy.

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THE STUDY OF STRATEGY.

BY MAJOR E. G. NORRIS, R.F.A.

War is an art founded upon many sciences. So declared Molke when asked whether war was a science or an art, and he might well have added, the two which form the plinth in this mighty structure are strategy and tactics. These rest on the real foundations formed of all sorts of sciences, national, mathematical, psychological and what not, the which no one man can master.

Every man who would be a professional soldier should at any rate understand the two great twin sciences of strategy and tactics, else how can he ever become a master of the art of war. They form, however, such a vast subject that to facilitate study the suggestion is made here to break them up, so far as may be possible, into sections. Each section necessarily dovetails into, in fact must blend with the next, for no complete separation can be made between them. The most suitable division would appear to be as follows:—

I.—*Preliminary Strategy*.—This must chiefly depend upon the shape of frontiers and the natural features which form them or cross them, upon political combinations, upon national policy, upon trunk lines of communications, and upon similar circumstances in neighbouring states, whether hostile or neutral. The study of this science hardly comes within the ordinary officer's duties. It must be the result of close conference between the highest military powers, the foreign office of a state, and the political head or his prime minister.

II.—*Pure Strategy*.—Immediately hostilities are declared, this becomes the paramount influence upon the war. Frontiers, except those of neutrals, disappear. "To advance or not to advance becomes a fundamental point for consideration." The enemy must be found and closed with. If we decide to take the initiative we must have everything prepared to at once follow up any success gained. These points are probably settled a day or two before the order "Go" is given, when the soldier is confidentially informed by his political superiors that war seems inevitable and immediate. No doubt two or three alternative schemes will be carefully prepared. All this is pure strategy based on the relative positions of friend and foe, on preparedness of both, on morale, on the weather at the moment and the condition of roads, on personal idiosyncracies. It is a short phase, but it may recur if during a campaign the fog of war thickens so much as to conceal the antagonists from one another. Every senior officer should understand it and every staff officer should do so completely.

III.—*Battle Strategy*.—When the main forces of the enemy have been located we come to this section, the borderland between

strategy and tactics, and this is the section demanding early and close study on the part of every soldier worthy of the name. It must necessarily follow out logically (so long as tactical successes have the initiation with the commander who has siezed it) the course selected at the commencement of the war from the many alternative plans prepared. A hundred years ago, and it is, if possible, more true today, the Archduke Charles said that the fact of huge modern armies in the field caused strategy to occupy the chief place in the art of war, the general plan of a campaign more than the details, demands the first place. How necessary then is the study of strategy! Certainly successful tactics reap the harvest of sound strategy, sometimes, as at Salamanca, even save the situation; but strategy to succeed must be sound, logical, and persistent. At times it has to bend and conform to tactical considerations, but when the moment has passed it must resume its original course and press on to its objective. When it bends, it is because for the time the enemy by his counter plan imposes a great strain on our plan. Then all our doings must depend upon one consideration, how can we destroy or capture the force opposed to us? The great tactical units, divisions or corps, have to be manœuvred into advantageous positions. Forces must be kept united, at any rate, by a proper system of field telegraphs, telephones, or signalling; all weak parts must be strengthened or guarded; we must act quickly and act decisively. All the same, these preliminary manœuvres may take days without any serious engagement, though parts of the army may become heavily engaged. This is the branch of the art of war which every commander down to company commanders must thoroughly understand. It is impossible to say when a crisis, great or small, may be met, when the "man on the spot" must act, must act in accordance with the "general idea," and must apply his tactical skill to further the strategic plan of the war. It is this branch of strategy which every officer should therefore study and study with care—thinking a lot; but more of this later.

IV.—*Grand Tactics*.—Each great tactical unit, having received its special orders, now moves to actually engage the enemy. The rules and precepts taught in "Combined Training" have to be followed, adapted to the battle strategy which has been decided upon. Every field officer should be a past master in the art and every other officer should know its principles minutely. Everybody realises already this necessity.

V.—*Minor Tactics*.—The tactics of each arm as taught in the training manuals, is a subject every young officer has to master as soon as possible.

I think if the study of the art of war were divided up into these sections, it would minimise the difficulty. The young officer would first master minor tactics, after a year or two he would begin the study of grand tactics. Later he should begin the study of battle strategy. I humbly claim some originality here. We often hear it said it is impossible to draw a line between tactics and strategy. Why try? Putting aside the first section, preliminary

strategy—an ante-bellum affair, we have pure strategy, strategy influenced by tactical considerations, tactics influenced by strategic considerations, and pure tactics.

For example in studying "battle strategy" let us take the case of Waterloo. We can start from the situation at the end of the engagements at Quatre Bras and Ligny, and follow up all the movements during the 17th until the moment Blücher struck the French right wing. To take a modern example, starting from Buller's orders, dated Frere, Camp 8th January 1900, we can follow all the incidents up to the 19th inclusive and meditate on what might have happened had all been done in half the time. It is unnecessary in these studies to deal with the main strategic plan of a campaign. For instance, we need not, in the examples indicated above, enquire why Napoleon elected to move on Brussels, or why Buller decided to command personally in Natal instead of going to the Orange River. These are matters of pure strategy and may be deferred until we have by studying many examples gained a clear idea of "battle strategy".

Strategy in principle is a very simple science. Henderson truly says, "The rules of strategy are few and simple. They may be learned in a week. They may be taught by familiar illustrations or a dozen diagrams. But such knowledge will not teach a man to lead an army" (Stonewall Jackson, Vol. I). Study is absolutely necessary, and by that I do not only mean reading, but also thinking. It is an excellent plan to read two books about the same event, one immediately after the other. Then compare, draw sketch maps, and write from memory a précis of events. For example read in Vol. III of the *Times History* all about the relief of Lady Smith from February 12th to March 1st, then study the same subject in Ducane's translation of the German account. Read anything else on the same subject, then draw a map and write one's own history of events, passing over all tactical details pure and simple. There is nothing like writing to make one think. What one reads often evaporates in an hour, unless one also meditates. I offer this suggestion to those officers who jib at the vastness of strategy. It is vast, but by taking up first this branch, "battle strategy," and picking out bit by bit great battles of the last 110 years, we can easily find morsels which we can digest. As a rule the situation, 48 hours before a battle, and all movements thereafter of the great tactical units will complete the subject. As we find our perception increasing we can study whole phases of a campaign, for example, April 1796 in Italy or May 1862 in the Shenandoah Valley, and eventually consider pure strategy as exemplified by the choice of Lisbon as our chief base in the Peninsular War, or Napoleon's decision to cross The Great St. Bernard into Italy in 1800. Finally, whenever we study what took place on such and such days, we should also think out carefully what might have taken place. To do so we have to detach our minds from all we have learnt after the event, endeavouring to realise the situation as it then appeared to one or other

commander. Captain Donaldson's recently published book leads us admirably along these lines. To learn lessons from history and so assist our consideration of possible future wars, we must always study alternatives, and further, we must study all the circumstances which modify strategic plans. These are of three kinds—Natural features: mountains, rivers, seas, plains, deserts, forests, all of which are the same now as ever. The work of man: cultivation, towns, roads, railways, bridges, vessels, telegraphs, motor cars, improved field glasses, signalling, tinned foods, things great and small, an ever increasing list. Idiosyncracies: the most subtle class of circumstances, idiosyncracies of nations, or armies, above all of leaders, idiosyncracies of climate and weather, politics and policy, morale and health, an ever changing but a never new list of circumstances.

RESTS FOR NIGHT FIRING.

By CAPT. J. S. BOGLE, QUEEN'S OWN CORPS OF GUIDES.

The Training Manual's Appendix 1905, page 69, and plates 19 (1—6), give descriptions of rests for night firing. With the exception of Fig. I, the remainder require a considerable amount of preparation and a carpenter, or carpenter's tools, as well as materials which are not always available.

I contend that a soldier (British or Native) who is taught to make a rest with a carefully dressed and notched plank or beam is hopelessly at sea if asked to construct one with a rough piece of wood, bricks, ghi tins, etc., etc., when no tools are available.

On the other hand, if he understands the two chief principles on which constancy and accuracy of fire from fixed rests depend and is taught to make a rest out of any material at hand, he has no difficulty in adopting the circumstances to the case when provided with a dressed and notched bed for his rifle.

The principles above referred to are—

(1)—ELEVATION.

The rifle must be brought forward on the bed of the rest exactly the same amount after each shot. If the front edge of the magazine is brought in contact with the edge of the rest, this principle is ensured, and the elevation will remain constant.

N.B.—The rest must, therefore, have a clean edge against which the magazine can be brought in close contact

(2)—DIRECTION.

The rifle must be pressed to one side (whichever side is found to be convenient when constructing the rest) until the fore end is in contact with and supported by two stops or guides, front and rear, both on the same side of the rifle. By this means direction is ensured.

The following describes how to make a rest out of any material likely to be at hand in cases of emergency when time is pressing, no tools being available.

Begin by building a wall or saugar to any required height. In the top layer select a stone with a flat edge and place this stone (A) so that the magazine of the rifle can be brought in close contact with it as shown in Fig. I.

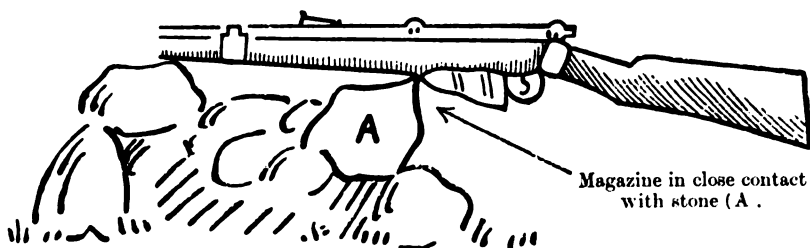
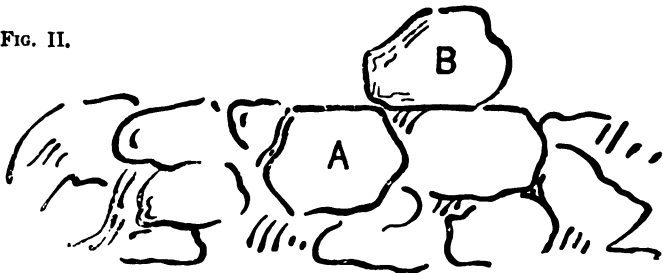


FIG. I.

On the right side of (A) place a heavy stone (B) which forms the rear stop or guide, weight it down, if necessary, so that it will not move when the rifle is pressed against it—Fig. II (plan).

FIG. II.



Set the sight and place the rifle with the magazine touching (A) and the fore end pressed against (B); aim at the mark or target, judging roughly to what height the front of the wall must be built up, select a stone which should be the flattest available and place it in position (C)—Fig. III—for the fore end to rest on and place a stone (D) to act as a front stop—Fig. III.

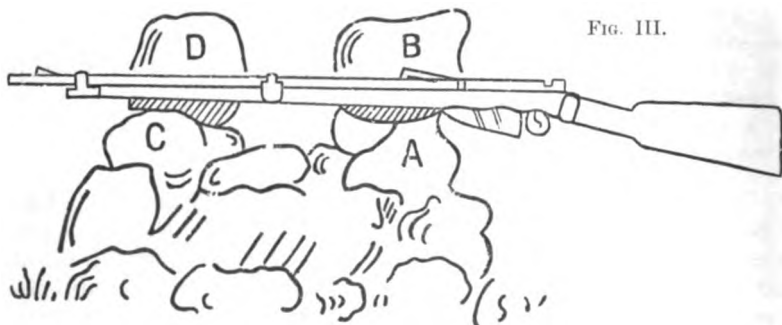


FIG. III.

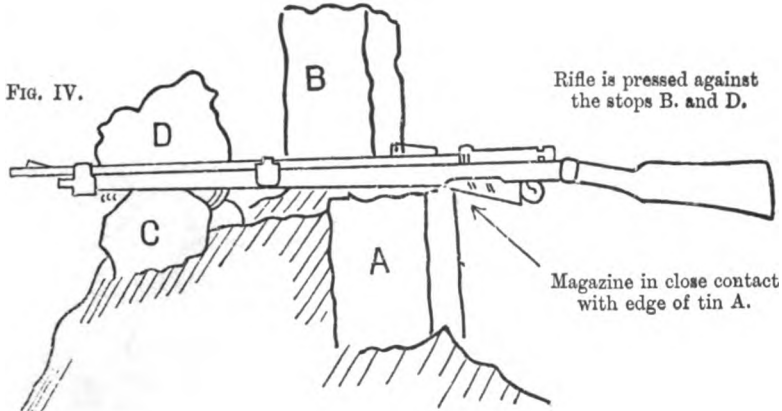
Place the rifle in position with the magazine touching (A), press the rifle firmly against (B) and (D), and adjust (C) and (D) until the sights are aligned on the mark.

Head cover can then be built up, taking care not to move any of the stones (A), (B), (C), (D). This is not difficult if each stone is weighted down when first placed correctly.

The only essential point is a sharp edge to the stone (A), in order that the front edge of the magazine may be brought in close contact with it. This, combined with the two supports to the rifle (A) and (C), ensures the elevation remaining constant; if this point is not attended to the elevation will vary.

The stone (A) may be replaced by anything at hand on service, provided it has a sharp edge, such as a ghi tin, a packing case, a piece of wood, a brick, etc., etc., and may be let into a mud wall or bank, etc. The principle of constructing the rest is the same no matter the material used.

Fig. IV shows a rest made with ghi tins and stones in a mud wall or bank.



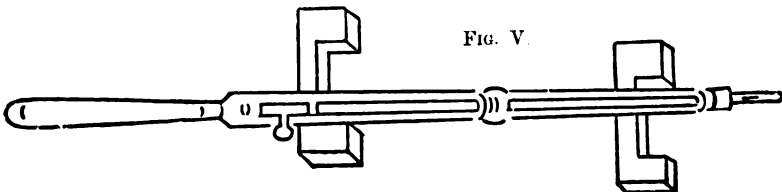
When the rest is completed it should be tested by removing the rifle, and then replacing it. Bring the magazine carefully in contact with (A), press the rifle against (B) and (D) and look along the sights, if they are not aligned on the mark, (C) and (D) must be re-adjusted and the test repeated.

N. B.—The sights must of course be kept upright.

3,000 rounds fired from improvised rests constructed according to the above description gave a result of 20 per cent of hits on a target $6' \times 8'$ at 600 yards. The test was carried out after dark and the targets were invisible from the firing point.

In all the diagrams in the Training Manual's Appendix, either notches are used or stops are employed on both sides of the rifle. No matter how carefully these stops are placed or the notches cut, the rifle has a certain amount of play laterally, whereas with the rest described above there can be no play, as the rifle is pressed against the two stops (B) and (D).

It is therefore advisable when using rests shown in the Appendix, in order to eliminate lateral play of the barrel between the stops or notches, to adjust the rifle with reference only to the two stops on the same side of the rifle by pressing the rifle against them. When using notches, they should be cut wide and the rifle adjusted with reference to two edges of the notches only, either on the same side of the rifle or diagonally—Fig. V.



When tools and time are available, slips of wood about 18' long cut as shown in Fig. V, make most satisfactory rests, and can be fitted into any loop-hole.

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NOTES ON THE USE OF CAVALRY IN THE AMERICAN CIVIL WAR.

BY MAJOR L. N. YOUNGHUSBAND, 19TH LANCERS.

At the commencement of the war there was no regular Cavalry on the southern side and the small force of United States Regular Cavalry was nearly all on the Frontier watching the Indian tribes. So that practically the whole of the very large forces of mounted men employed by both North and South were raised and trained during the war.

Thus they were not bound by any traditions, and the result of their four years' experience of war training must be of the greatest value to us, especially when we consider the great intelligence of the American people.

It is well, however, to bear two things in mind, firstly that war was in progress the whole time, therefore there was little opportunity to practise and attain to that precision in drill which is necessary to obtain the best results from the use of large bodies of mounted men. Secondly, the terrain of Virginia where the most decisive combats took place was not favourable to the employment of the shock tactics of large bodies.

The result of their experience as regards equipment was—

- (1) That in enclosed country the man armed only with sabre and revolver was hung up at once.
- (2) That men armed with rifles or repeating carbines were of the greatest value.
- (3) But that Cavalry, to fulfil its rôle, must be armed with either sword or lance (the latter was not used) in addition to the rifle.

After three years' war the Northern Cavalry were armed with rifle and sabre and the Southern Cavalry were not, with the result that after Sheridan's campaign in the Shenandoah Valley in 1864, General Early, the Confederate General, wrote :

"Lorimer's Cavalry is armed entirely with rifles and has no sabres ; the consequence is they cannot fight on horseback, and in this open country they cannot successfully fight on foot against large bodies of Cavalry".

This is especially significant as the Southern Cavalry had been immensely superior to the Northerners during the earlier part of the war.

TRAINING.

I think it was proved that, though it is easy to raise, equip and train a large force of mounted riflemen at fairly short notice if material in the shape of men accustomed to ride, shoot, and live in the country is available, it is not possible to improvise regular

Cavalry during a campaign. To obtain the precision of drill requisite to manœuvre rapidly, large bodies of mounted men requires considerable time, and it can then only be obtained if the men are mounted on thoroughly trained horses.

The most important purely Cavalry action in the war was the fight at Brandy Station in 1863.

Stuart with about 10,000 men was covering Lee's army, which was commencing a flank march past the Federal army under Hooker, which was eventually to carry it to Gettysburg.

Early one morning General Pleasanton, Hooker's Cavalry Commander, crossed the river Rappahanock (on the banks of which the opposing outposts were watching each other) in two columns, with the intention of reconnoitring towards Culpepper Court House. Stuart's force immediately turned out to support their outposts which were being driven in.

For about eight hours there was dismounted fighting varied by mounted charges of regiments and squadrons with varying success, and in one case two brigades of about 800 men each met, a *mêlée* ensued from which the Confederates emerged victorious. Eventually Pleasanton withdrew his brigades, having practically attained his object, that is, he had ascertained that a large force was concentrated behind Culpepper Court House. It seems certain that if either side had been trained to the use of shock tactics in large bodies it would have scored a pronounced success.

In outposts, reconnoitring and detached duties generally, it took the Northerners nearly three years to attain to the proficiency of the Southern Cavalry.

The Federal horsemen coming from cities had to be trained in every point, whereas to the Southerners these duties from their former mode of life came naturally.

In dismounted work also the Southerners were for years the superiors of the Northerners; they were accustomed to the use of firearms and to taking cover.

But when the Federals were eventually trained, they were probably the more efficient body of Cavalry, as the discipline required to train them stood them in good stead.

At the commencement of the war despatches were sent by orderlies taken from the nearest Cavalry Corps, but the danger of this was soon realised by Jackson, after important messages had gone astray, and he organised a special corps of despatch riders. His example was followed by other Generals, and this seems the most satisfactory arrangement for transmission of orders, etc., where the use of telephones, telegraph or visual signalling is not possible.

TACTICS.

Protective duties and Reconnaissance were carried out in much the same manner as in European armies, though certainly at the end of the war no European army could have equalled the Americans in these duties.

The Southern Cavalry at the commencement was far superior to the Northern, and its efficiency enabled Lee and Jackson to win their most brilliant successes, both by the information it collected and the impenetrable screen it offered to the attempts of the Northern Cavalry to get intelligence.

In action in the enclosed and heavily wooded country of Virginia and other parts they fought largely on foot, but the Cavalry on both sides were always anxious to charge mounted, when opportunity arose, and probably mounted men crossed swords oftener in this war than in any that has been fought in modern times. They were by no means mounted infantry only, though they were the first to discover the use of the mounted rifleman. Owing to lack of training and to the terrain, these charges were not executed as a European Cavalry would have done. The charge often consisted of a gallop in fours down a plank road with dense wood on each side or between walls. Regiments and larger bodies, when they did charge in the open, generally did so in column of squadrons.

Raids on a large scale were a novel and special feature of the war. They were started first by the Southern Cavalry under General Stuart who achieved many striking successes, notably his first raid round McClellan's army and his dash for Catletts Station, before the second Manassas, where, besides doing very considerable damage to material, he captured the baggage of the Federal Commander, General Pope, in which was found his pocket book containing much very important information.

As the resources of the North were practically inexhaustible, the most valuable result of Stuart's raids was the information he collected, and not the damage (however considerable) to material which he effected. In addition to the damage done, these raids had other important results, the enemy, in his efforts to catch the raiders, exhausted his Cavalry who, being unable to fathom the designs of the raiders, rode great distances with no results. The morale also of the army to which the raiders belonged was raised by these exploits, and that of the other army correspondingly reduced.

In some cases, however, though no disaster befell the raiders themselves, their absence from the army was the cause of disaster. Two notable instances are (1) the Federal Cavalry Commander, Stoneman's raid round Lee's army whilst the battle of Chancellorsville was being fought; (2) Stuart's absence on a raid during the preliminary movements in the Gettysburg campaign.

In (1) Stoneman was sent to a position where he would be on Lee's line of retreat; in his absence, Jackson was able to launch, unobserved, his great flank attack which won the battle for the Confederates, and in consequence Lee had no cause to retreat.

In (2) Stuart successfully executed his raid, but in his absence Lee's right was uncovered. The Federals approached without his knowledge and were able to seize the Gettysburg position which was the position he had intended to occupy. Lee had therefore either to retire or attack an enemy superior in numbers in a strong position.

He did attack, but without success, and the loss of this battle was in all probability the turning point in the war.

In the later stages of the war the Federals used raids with great effect to exhaust the limited resources of the South. In 1865 General Wilson, with a force some 14,000 strong, marched across Alabama and Georgia, captured three important cities, 6,000 prisoners and 156 guns, destroyed railroads, iron foundries and factories, travelling 600 miles in 30 days.

On the whole when the forces of two armies are approximately equal, it seems probable that they will seldom be able to spare the large number of mounted men required for an effective raid against communications, without sacrificing security.

Combined Tactics.—Sheridan was the only General who really successfully combined, on the battlefield, the use of Cavalry with that of the other arms. His campaign in the Shenandoah Valley in 1864 contained admirable instances of Combined Tactics. At the battle of Winchester especially, the Confederates occupied a very strong position on which the Federal Infantry, in spite of superior numbers, could make no impression. Sheridan's Cavalry, however drove in the weaker Confederate squadrons and, arriving on the left of the position, repeatedly charged the Southern Infantry. Sheridan at the same time pushed forward his Infantry attack and the position was won, only nightfall saved Early, the Southern General, from a crushing disaster.

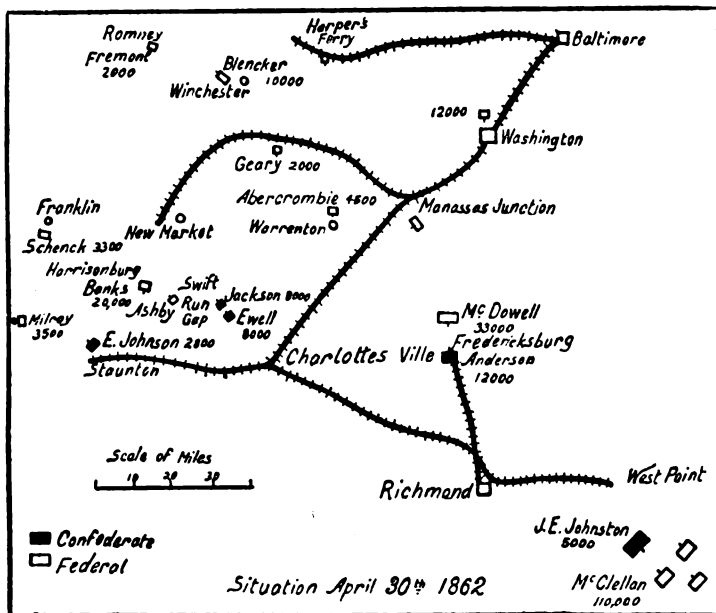
To illustrate the use made by the Americans of their Cavalry the following examples are taken:—

- (1) The Valley campaign of 1862 to show the value of the efficient performance of detached duties of Cavalry.
- (2) Stuart's raid round McClellan in 1862 as being the first raid on a large scale.
- (3) Sheridan's raid to Richmond in 1864.
- (4) An example of Partisan Service, to show how the enterprise of a few men can disturb the rest and impair the efficiency of large bodies.

THE VALLEY CAMPAIGN OF 1862.

In May 1862, the situation in Virginia was as follows:—Lee with the main body of the Confederate army was facing McClellan, who, having transferred the army of the Potomac by sea to the Peninsular, was threatening Richmond from the east. At Fredericksburg, north of Richmond, was a Federal force of 30,000 men under McDowell, which it was intended to reinforce by Shields' Division of 11,000 men from the Shenandoah Valley, which would then march to join hands with McClellan's right and thus bring his army up to a strength of 150,000 men. In addition, the Federals had in the Shenandoah and adjoining valleys 35,000 to 40,000 men under Banks and Fremont. To oppose these Jackson had his own Division about 8,000 men at Swift Run Gap. E. Johnston's Brigade at Staunton of about 3,000 men and Ewell's Division of 8,000 men were placed at

his disposal at a later date. As McClellan far outnumbered Lee, it was of the utmost importance to Lee firstly to prevent the junction of McDowell's Corps with McClellan and secondly to concentrate every man he could to oppose the latter.



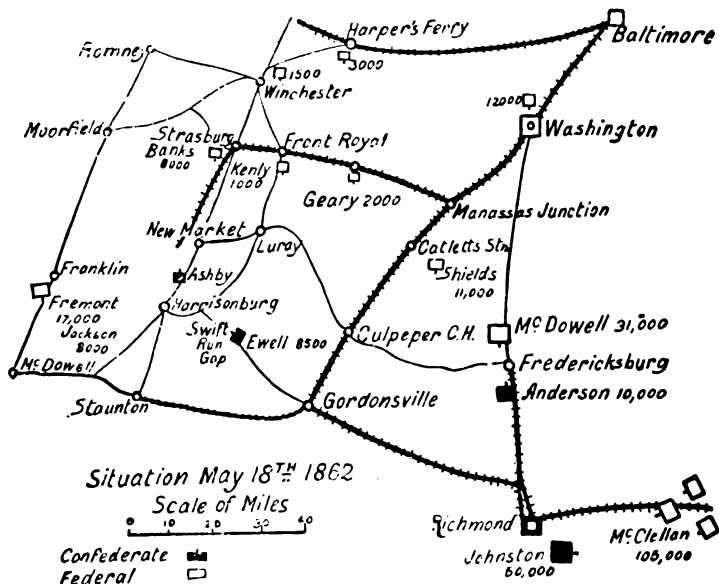
To attain his object Lee determined to direct Jackson to strike a blow in the Shenandoah Valley.

Lincoln and the Federal Government were peculiarly sensitive to danger in this quarter, as the Valley offered a covered way to the immediate neighbourhood of Washington which they considered unduly denuded of troops. Lee's and Jackson's calculations were correct, and when the blow fell not only was Shields' Division of 11,000 men recalled to the Valley but the larger part of McDowell's Corps was also sent there. Whilst McClellan did not receive the assistance of a single man of the 40,000, which were to have reinforced him under McDowell, Jackson joined Lee with his army and took part in the battles which forced McClellan to evacuate the Peninsula.

To understand Jackson's movements it is necessary to remember the peculiar formation of the Alleghanies in Virginia; they run in parallel ridges which separate the three main valleys, the ridges are crossed at intervals by "gaps" which form the only means of communication between the valleys.

At the end of April, Jackson was at Swift Run Gap and General E. Johnston was at Staunton.

The Federal General, Banks, was at Harrisonburg within a day's march of Jackson with 21,000 which included Shields' Division of



11,000 men who were under orders to join McDowell as soon as they could be spared from the Valley.

Milroy with Fremont's advanced troops was approaching Staunton.

Banks at Harrisonburg was as near Staunton as Jackson was and on a better road.

Jackson's plan was (a) to deceive Banks and give him a sense of security, (b) to join Johnstone at Staunton, and drive back Fremont's advanced troops which were rather exposed, and (c) then rapidly to return, unite with Ewell's Division and fall on Banks.

To effect these objects, on April 30th he marched towards Port Republic, the track was a quagmire, and for three days heavy rain fell so little progress was made. On the 4th day the weather improved, the army suddenly changed the direction of its march, turned its back on the Valley and crossed the Blue Ridge. These movements were made in sight of the Federal outposts.

Ashby with the Cavalry was left to watch Banks, and Ewell's Division was moved to the Elk Run Valley which Jackson had just left.

Banks, thinking that now all was secure in the Shenandoah Valley, at once despatched Shields and his Division to join McDowell at Fredericksburg.

In the meanwhile Jackson's army had arrived at the railway near Charlottesville where long lines of cars were in waiting for them. The men were much depressed at leaving the Valley (the home of many of them) to the enemy, and like Banks expected that they would be entrained for Richmond. Next morning however when the cars began

to move off towards Staunton and not Richmond, something of Jackson's plan dawned on the men and cheer after cheer went up.

The trains soon arrived at Staunton and at once Cavalry were sent out to stop any one proceeding in the direction of the enemy.

Jackson decided to strike first at Milroy, the nearest exposed detachment. Milroy was not without information and fell back to McDowell where Schenck was posted with another Brigade; here they endeavoured to stop Jackson's advance but were defeated; they managed, however, to withdraw in the night. Jackson drove them back to Franklin, where leaving his Cavalry to watch them, he rapidly counter-marched to Staunton.

Banks, becoming alarmed, had fallen back to Strasburg where he occupied a strongly entrenched position with 8,000 men and sent Kelly with 1,000 men to Front Royal at the head of the Luray Valley.

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On June 8th, Shields' advance guard arrived at Port Republic and were driven back. The same day Fremont with about 13,000 men advanced to attack Ewell who had about 7,000 in position. Ewell drove him back, and, if the situation had permitted, could probably have inflicted a heavy defeat, but his troops were required at Port Republic.

Two Brigades were left to watch and delay Fremont and the rest of the army marched to Port Republic. Next morning Jackson attacked the Federal Forces under Shields near that place, but owing to the damaged state of the bridge he could not develop his attack in full force till 10 o'clock. The two Brigades watching Fremont were recalled, crossed the river and burnt the bridge, and by 10-20 the Federals were in full retreat pursued by the Southerners.

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Jackson had succeeded in attaining his first object, *i.e.*, had drawn to the Valley and away from the neighbourhood of Richmond nearly 40,000 men. It now remained for him to execute the second part of his instructions, namely, to join Lee's army without his absence from the Valley being known.

He therefore again moved west to the banks of the Shenandoah, and for five days, whilst his Infantry rested, he employed every ruse to delude the enemy. His Cavalry, though far from support were instructed to manœuvre boldly, the outpost line was made as close as possible and no civilians were allowed to pass. No one except Munford knew Jackson's plans, not even his staff. On June 17th he began his move to join Lee and on June 23rd Jackson rode into Richmond leaving his army at Ashlands.

Munford carried out his instructions to such good purpose that on June 28th, Banks reported from Strasburg that, although he was confident that Jackson was not within 30 miles, he was preparing to attack him. Jackson had then been fighting McClellan on the Chichahominy for two days. The success of this campaign against such superior numbers depended entirely on the skill with which Jackson concealed his own movements and obtained accurate information of those of his adversaries, and this the vigilance and enterprise of his Cavalry under Ashby and Munford enabled him to do.

The work required of the Cavalry was very varied:—

- (1) To prevent enemy's Cavalry getting information.
- (2) To prevent enemy getting information from civilians
- (3) To accurately locate the enemy's forces.

Cavalry during a campaign. To obtain the precision of drill requisite to manœuvre rapidly, large bodies of mounted men requires considerable time, and it can then only be obtained if the men are mounted on thoroughly trained horses.

The most important purely Cavalry action in the war was the fight at Brandy Station in 1863.

Stuart with about 10,000 men was covering Lee's army, which was commencing a flank march past the Federal army under Hooker, which was eventually to carry it to Gettysburg.

Early one morning General Pleasanton, Hooker's Cavalry Commander, crossed the river Rappahannock (on the banks of which the opposing outposts were watching each other) in two columns, with the intention of rejoining towards Culpepper Court House. Stuart's force immediately turned out to support their outposts which were being driven in.

For about eight hours there was dismounted fighting varied by mounted charges of regiments and squadrons with varying success, and in one case two brigades of about 800 men each met, a mêlée ensued from which the Confederates emerged victorious. Eventually Pleasanton withdrew his brigades having practically attained his object, that is, he had ascertained that a large force was concentrated behind Culpepper Court House. It seems certain that if either side had been trained to the use of shock tactics in large bodies it would have scored a pronounced success.

In outposts, reconnoitring and detached duties generally it took the Northerners nearly three years to attain to the proficiency of the Southern Cavalry.

The Federal horsemen coming from cities had to be trained in every point, whereas to the Southerners these duties from their former mode of life came naturally.

In dismounted work also the Southerners were for years the superiors of the Northerners, they were accustomed to the use of firearms and to taking cover.

But when the Federals were eventually trained, they were probably the more efficient body of Cavalry as the discipline required to train them stood them in good stead.

At the commencement of the war despatches were sent by orderlies taken from the nearest Cavalry Corps, but the danger of this was soon realised by Jackson, after important messages had gone astray, and he organised a special corps of despatch riders. His example was followed by other Generals, and this seems the most satisfactory arrangement for transmission of orders etc. where the use of telegraph, or graph or visual signalling is not possible.

TACTICS

Particulars of the Battle of Brandy Station were carried out in much the same manner as in European armies though certainly at the end of the war no European army could have carried off the Americans in this disaster.

The Southern Cavalry at the commencement was far superior to the Northern, and its efficiency enabled Lee and Jackson to win their most brilliant successes, both by the information it collected and the impenetrable screen it offered to the attempts of the Northern Cavalry to get intelligence.

In action in the enclosed and heavily wooded country of Virginia and other parts they fought largely on foot, but the Cavalry on both sides were always anxious to charge mounted, when opportunity arose, and probably mounted men crossed swords oftener in this war than in any that has been fought in modern times. They were by no means mounted infantry only, though they were the first to discover the use of the mounted rifleman. Owing to lack of training and to the terrain, these charges were not executed as a European Cavalry would have done. The charge often consisted of a gallop in fours down a plank road with dense wood on each side or between walls. Regiments and larger bodies, when they did charge in the open, generally did so in column of squadrons.

Raids on a large scale were a novel and special feature of the war. They were started first by the Southern Cavalry under General Stuart who achieved many striking successes, notably his first raid round McClellan's army and his dash for Catletts Station, before the second Manassas, where, besides doing very considerable damage to material, he captured the baggage of the Federal Commander, General Pope, in which was found his pocket book containing much very important information.

As the resources of the North were practically inexhaustible, the most valuable result of Stuart's raids was the information he collected, and not the damage (however considerable) to material which he effected. In addition to the damage done, these raids had other important results, the enemy, in his efforts to catch the raiders, exhausted his Cavalry who, being unable to fathom the designs of the raiders, rode great distances with no results. The morale also of the army to which the raiders belonged was raised by these exploits, and that of the other army correspondingly reduced.

In some cases, however, though no disaster befell the raiders themselves, their absence from the army was the cause of disaster. Two notable instances are (1) the Federal Cavalry Commander, Stoneman's raid round Lee's army whilst the battle of Chancellorsville was being fought; (2) Stuart's absence on a raid during the preliminary movements in the Gettysburg campaign.

In (1) Stoneman was sent to a position where he would be on Lee's line of retreat; in his absence, Jackson was able to launch, unobserved, his great flank attack which won the battle for the Confederates, and in consequence Lee had no cause to retreat.

In (2) Stuart successfully executed his raid, but in his absence Lee's right was uncovered. The Federals approached without his knowledge and were able to seize the Gettysburg position which was the position he had intended to occupy. Lee had therefore either to retire or attack an enemy superior in numbers in a strong position.

NOTES ON THE USE OF CAVALRY IN THE AMERICAN CIVIL WAR.

BY MAJOR L. N. YOUNGHUSBAND, 19TH LANCERS.

At the commencement of the war there was no regular Cavalry on the southern side and the small force of United States Regular Cavalry was nearly all on the Frontier watching the Indian tribes. So that practically the whole of the very large forces of mounted men employed by both North and South were raised and trained during the war.

Thus they were not bound by any traditions, and the result of their four years' experience of war training must be of the greatest value to us, especially when we consider the great intelligence of the American people.

It is well, however, to bear two things in mind, firstly that war was in progress the whole time, therefore there was little opportunity to practise and attain to that precision in drill which is necessary to obtain the best results from the use of large bodies of mounted men. Secondly, the terrain of Virginia where the most decisive combats took place was not favourable to the employment of the shock tactics of large bodies.

The result of their experience as regards equipment was—

- (1) That in enclosed country the man armed only with sabre and revolver was hung up at once.
- (2) That men armed with rifles or repeating carbines were of the greatest value.
- (3) But that Cavalry, to fulfil its rôle, must be armed with either sword or lance (the latter was not used) in addition to the rifle.

After three years' war the Northern Cavalry were armed with rifle and sabre and the Southern Cavalry were not, with the result that after Sheridan's campaign in the Shenandoah Valley in 1864, General Early, the Confederate General, wrote :

"Lorimer's Cavalry is armed entirely with rifles and has no sabres ; the consequence is they cannot fight on horseback, and in this open country they cannot successfully fight on foot against large bodies of Cavalry".

This is especially significant as the Southern Cavalry had been immensely superior to the Northerners during the earlier part of the war.

TRAINING.

I think it was proved that, though it is easy to raise, equip and train a large force of mounted riflemen at fairly short notice if material in the shape of men accustomed to ride, shoot, and live in the country is available, it is not possible to improvise regular

Cavalry during a campaign. To obtain the precision of drill requisite to manœuvre rapidly, large bodies of mounted men requires considerable time, and it can then only be obtained if the men are mounted on thoroughly trained horses.

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TACTICS

Part of the tactics of the Cavalry—operations were carried out in much the same manner as in European armies though certainly at the end of the war no European army could have copied the Americans in these details.

The Southern Cavalry at the commencement was far superior to the Northern, and its efficiency enabled Lee and Jackson to win their most brilliant successes, both by the information it collected and the impenetrable screen it offered to the attempts of the Northern Cavalry to get intelligence.

In action in the enclosed and heavily wooded country of Virginia and other parts they fought largely on foot, but the Cavalry on both sides were always anxious to charge mounted, when opportunity arose, and probably mounted men crossed swords oftener in this war than in any that has been fought in modern times. They were by no means mounted infantry only, though they were the first to discover the use of the mounted rifleman. Owing to lack of training and to the terrain, these charges were not executed as a European Cavalry would have done. The charge often consisted of a gallop in fours down a plank road with dense wood on each side or between walls. Regiments and larger bodies, when they did charge in the open, generally did so in column of squadrons.

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He did attack, but without success, and the loss of this battle was in all probability the turning point in the war.

In the later stages of the war the Federals used raids with great effect to exhaust the limited resources of the South. In 1865 General Wilson, with a force some 14,000 strong, marched across Alabama and Georgia, captured three important cities, 6,000 prisoners and 156 guns, destroyed railroads, iron foundries and factories, travelling 600 miles in 30 days.

On the whole when the forces of two armies are approximately equal, it seems probable that they will seldom be able to spare the large number of mounted men required for an effective raid against communications, without sacrificing security.

Combined Tactics.—Sheridan was the only General who really successfully combined, on the battlefield, the use of Cavalry with that of the other arms. His campaign in the Shenandoah Valley in 1864 contained admirable instances of Combined Tactics. At the battle of Winchester especially, the Confederates occupied a very strong position on which the Federal Infantry, in spite of superior numbers, could make no impression. Sheridan's Cavalry, however drove in the weaker Confederate squadrons and, arriving on the left of the position, repeatedly charged the Southern Infantry. Sheridan at the same time pushed forward his Infantry attack and the position was won, only nightfall saved Early, the Southern General, from a crushing disaster.

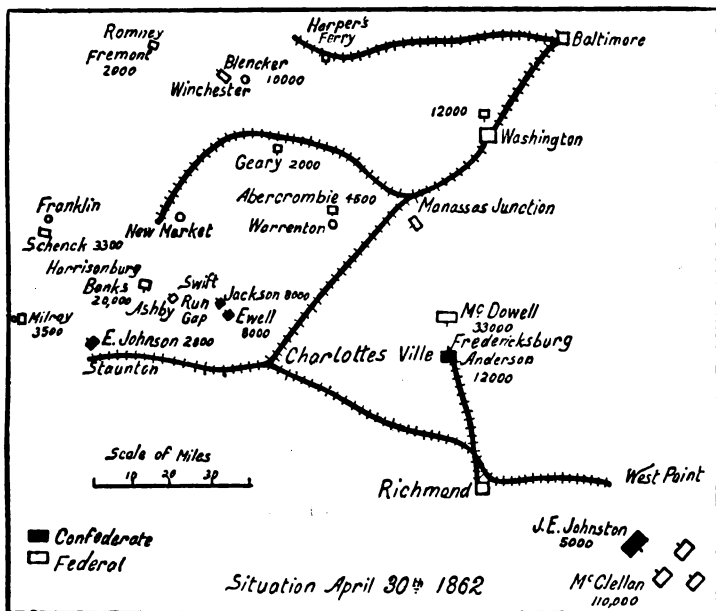
To illustrate the use made by the Americans of their Cavalry the following examples are taken:—

- (1) The Valley campaign of 1862 to show the value of the efficient performance of detached duties of Cavalry.
- (2) Stuart's raid round McClellan in 1862 as being the first raid on a large scale.
- (3) Sheridan's raid to Richmond in 1864.
- (4) An example of Partisan Service, to show how the enterprise of a few men can disturb the rest and impair the efficiency of large bodies.

THE VALLEY CAMPAIGN OF 1862.

In May 1862, the situation in Virginia was as follows:—Lee with the main body of the Confederate army was facing McClellan, who, having transferred the army of the Potomac by sea to the Peninsular, was threatening Richmond from the east. At Fredericksburg, north of Richmond, was a Federal force of 30,000 men under McDowell, which it was intended to reinforce by Shields' Division of 11,000 men from the Shenandoah Valley, which would then march to join hands with McClellan's right and thus bring his army up to a strength of 150,000 men. In addition, the Federals had in the Shenandoah and adjoining valleys 35,000 to 40,000 men under Banks and Fremont. To oppose these Jackson had his own Division about 8,000 men at Swift Run Gap. E. Johnston's Brigade at Staunton of about 3,000 men and Ewell's Division of 8,000 men were placed at

his disposal at a later date. As McClellan far outnumbered Lee, it was of the utmost importance to Lee firstly to prevent the junction of McDowell's Corps with McClellan and secondly to concentrate every man he could to oppose the latter.



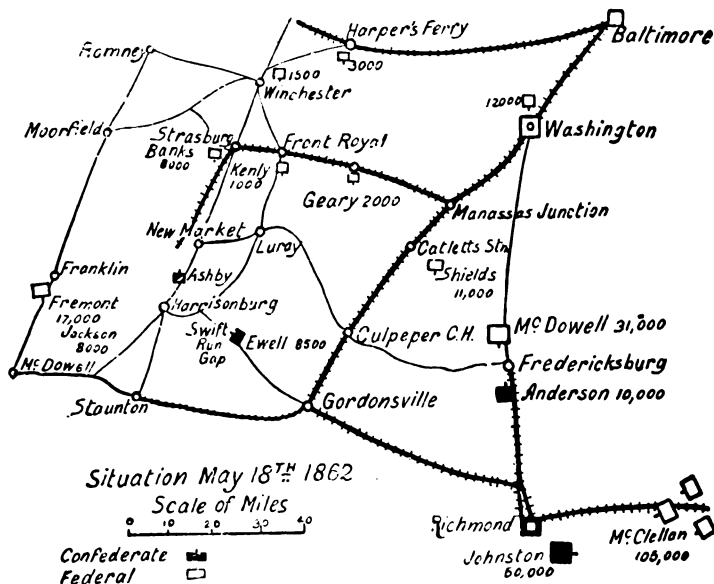
To attain his object Lee determined to direct Jackson to strike a blow in the Shenandoah Valley.

Lincoln and the Federal Government were peculiarly sensitive to danger in this quarter, as the Valley offered a covered way to the immediate neighbourhood of Washington which they considered unduly denuded of troops. Lee's and Jackson's calculations were correct, and when the blow fell not only was Shields' Division of 11,000 men recalled to the Valley but the larger part of McDowell's Corps was also sent there. Whilst McClellan did not receive the assistance of a single man of the 40,000, which were to have reinforced him under McDowell, Jackson joined Lee with his army and took part in the battles which forced McClellan to evacuate the Peninsular.

To understand Jackson's movements it is necessary to remember the peculiar formation of the Alleghanies in Virginia; they run in parallel ridges which separate the three main valleys, the ridges are crossed at intervals by "gaps" which form the only means of communication between the valleys.

At the end of April, Jackson was at Swift Run Gap and General E. Johnston was at Staunton.

The Federal General, Banks, was at Harrisonburg within a day's march of Jackson with 21,000 which included Shields' Division of



11,000 men who were under orders to join McDowell as soon as they could be spared from the Valley.

Milroy with Fremont's advanced troops was approaching Staunton.

Banks at Harrisonburg was as near Staunton as Jackson was and on a better road.

Jackson's plan was (a) to deceive Banks and give him a sense of security, (b) to join Johnstone at Staunton, and drive back Fremont's advanced troops which were rather exposed, and (c) then rapidly to return, unite with Ewell's Division and fall on Banks.

To effect these objects, on April 30th he marched towards Port Republic, the track was a quagmire, and for three days heavy rain fell so little progress was made. On the 4th day the weather improved, the army suddenly changed the direction of its march, turned its back on the Valley and crossed the Blue Ridge. These movements were made in sight of the Federal outposts.

Ashby with the Cavalry was left to watch Banks, and Ewell's Division was moved to the Elk Run Valley which Jackson had just left.

Banks, thinking that now all was secure in the Shenandoah Valley, at once despatched Shields and his Division to join McDowell at Fredericksburg.

In the meanwhile Jackson's army had arrived at the railway near Charlottesville where long lines of cars were in waiting for them. The men were much depressed at leaving the Valley (the home of many of them) to the enemy, and like Banks expected that they would be entrained for Richmond. Next morning however when the cars began

to move off towards Staunton and not Richmond, something of Jackson's plan dawned on the men and cheer after cheer went up.

The trains soon arrived at Staunton and at once Cavalry were sent out to stop any one proceeding in the direction of the enemy.

Jackson decided to strike first at Milroy, the nearest exposed detachment. Milroy was not without information and fell back to McDowell where Schenck was posted with another Brigade; here they endeavoured to stop Jackson's advance but were defeated; they managed, however, to withdraw in the night. Jackson drove them back to Franklin, where leaving his Cavalry to watch them, he rapidly counter-marched to Staunton.

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Jackson had succeeded in attaining his first object, *i.e.*, had drawn to the Valley and away from the neighbourhood of Richmond nearly 40,000 men. It now remained for him to execute the second part of his instructions, namely, to join Lee's army without his absence from the Valley being known.

He therefore again moved west to the banks of the Shenandoah, and for five days, whilst his Infantry rested, he employed every ruse to delude the enemy. His Cavalry, though far from support were instructed to manœuvre boldly, the outpost line was made as close as possible and no civilians were allowed to pass. No one except Munford knew Jackson's plans, not even his staff. On June 17th he began his move to join Lee and on June 23rd Jackson rode into Richmond leaving his army at Ashlands.

Munford carried out his instructions to such good purpose that on June 28th, Banks reported from Strasburg that, although he was confident that Jackson was not within 30 miles, he was preparing to attack him. Jackson had then been fighting McClellan on the Chichahominy for two days. The success of this campaign against such superior numbers depended entirely on the skill with which Jackson concealed his own movements and obtained accurate information of those of his adversaries, and this the vigilance and enterprise of his Cavalry under Ashby and Munford enabled him to do.

The work required of the Cavalry was very varied:—

- (1) To prevent enemy's Cavalry getting information.
- (2) To prevent enemy getting information from civilians
- (3) To accurately locate the enemy's forces.

- (4) To deceive the enemy by giving an impression of strength where they were quite unsupported.
- (5) To hold defiles.
- (6) Pursuit of beaten enemy.
- (7) Covering retirement of the army.
- (8) Demolition of bridges, etc.

These duties were generally brilliantly accomplished, though on certain occasions the want of discipline caused opportunities to be lost.

STUART'S RAID ROUND MCCLELLAN, JUNE 1862.

This was the first raid of a large force made by either side during the war. It was not primarily meant to be a raid. Stuart's mission was to get information as to where McClellan's right flank rested, and what was his line of communication. Having accomplished his object, Stuart decided that the bold course of continuing his march right round McClellan's army was safer than an attempt to return by the flank he had started.

His force, consisting of 1,200 men with 2 guns, was concentrated at Ashland Station on June 12th, no fires were allowed and silence was maintained. At daybreak the following morning the march began, the force heading for Hanover Court House. A Federal scouting party was met at Howe's Shop, and a short distance further on a piquet was surprised and captured without a shot being fired.

A Federal squadron now appeared which had been sent out to verify the report sent in by the scouting party. Stuart advancing rapidly drove in the squadron and rushed the Federal Camp at Old Church. Here a short halt was called, when the friendly inhabitants flocked out with food and drink.

The march was resumed by Smith's Stores through New Kent County to Tunstall Station on the York River Railroad. Near the Station a body of Federal Cavalry were met who, seeing the strength of Stuart's force, retired so hurriedly that they did not even warn a Company of Infantry at the Station, who were in consequence surprised and captured. Stuart had now accomplished his mission, as he had already ascertained that the Federal right flank was uncovered and here he found that he was on the line of their communications. It was now he decided to move round the Northern army. The railway was obstructed, and though it was nearly nightfall the march was at once continued *via* New Baltimore through New Kent to Sycamore Ford on the Chichahominy, which was reached at dawn. Owing to rain the ford was too deep to cross on foot, and the landing place on the far bank being up stream, it was difficult to swim. In two hours only 75 men had crossed. Stuart however succeeded in making a bridge, with material obtained from the debris of an old bridge and of a large warehouse standing near, strong enough to get his guns across; the horses were formed in column of fours and urged into the water. The whole force was across the stream and their bridge burnt in a little more than three hours.

The march continued across James County to the James River where they arrived that evening and rested two hours, fires were lighted, food cooked and the horses obtained a good feed in a field of clover.

Richmond was only 25 miles off, but it was still possible for the enemy to cut off the column, so the march was resumed by night by the river road. The columns, unnoticed, passed close to the Federal fleet of gunboats, but owing to the height of the river bank it could only have been visible from the masts. Shortly after dawn it passed the Confederate piquet line, having ridden about 110 miles in 48 hours.

Its loss was one killed and a few wounded and it brought in about 150 prisoners and over 200 horses.

Had Stuart's object been merely the destruction of supplies and material, it was possible for him after he had arrived at Tunstall Station to have destroyed the Federal Base at Whitehouse.

SHERIDAN'S RICHMOND RAID.

In April 1864 General Sheridan was given the command of the entire Cavalry of the army of the Potomac, about 15,000 men in all.

On May 5th the battle of the Wilderness began. On May 7th, Grant began moving to his left to get clear of the thick unfavourable country called the Wilderness. On May 8th, Sheridan received verbal orders from General Grant to start on his raid to Richmond. Its object was, as expressed by General Sheridan, "If I am permitted to cut loose from this army I will draw Stuart after me and whip him too." This was the principal object of the raid, the damage to material and communications being only a secondary object.

The Command on that day was stripped of unserviceable animals, tents, baggage, etc.

It took its ammunition train, ambulances, and a few pack mules; three days' rations and a half day's forage were carried by the men. At 6 A.M. on the 9th May the force started by the Fredericksburg-Richmond road (on Grant's left). Its strength was 10,000 mounted men with Horse Artillery.

That night it arrived at and captured Beever Dam Station, on the Virginia Central Railroad with two train loads of wounded and some Federal prisoners, also 1,500,000 rations and medical stores. The railroad and telegraph were destroyed for a considerable distance during the night, whilst the main body rested.

The destruction of the rations and medical stores was a serious blow to the Confederates, who were badly in need of them.

Next morning Stuart had concentrated to oppose the march, but was not strong enough to prevent Sheridan marching to Ground Squirrel Bridge over the South Anna River, where he bivouacked the night of May 10th. At 3 A.M. on the morning of the 11th, one Brigade moved to Ashland and destroyed 6 miles of track of the Richmond-Fredericksburg Railway, though opposed by Confederate

Cavalry. At 5 A.M. the main body moved on Yellow Tavern, only 6 miles from Richmond. Here a determined stand was made by the Confederates. A despatch from Stuart to Bragg, asking for reinforcements and showing his weakness was captured.

The Federals pressed on and in the fight which ensued Stuart the great Confederate Cavalry leader, was killed.

The inhabitants of Richmond were thrown into the greatest state of alarm and a general call to arms was made.

It had now however rained for nearly three days and the roads in the Chichahominy region were almost impassable.

Sheridan marched that night, but in the dark the head of his column passed the point where he had intended to turn east to Mechanicsville. His staff was despatched in every direction, and at last the road was found. Immediately a Brigade was sent down it to seize the Meadow Bridge and cover the crossing of the rest of the Force. In the meanwhile day broke and one Brigade with a Battery of Artillery was found to be within the outer line of the Richmond defences. To the south was the Richmond Garrison, on the east one Brigade was fighting for the crossing of the Chichahominy, and to the north another Brigade was withstanding the attacks of the Confederate Cavalry under Gordon.

In order to force a passage Merritt now dismounted three regiments of his Brigade, Custer did likewise and charging over the railway bridge drove back the Confederates and commenced to repair the foot bridge, the flooring of which had been torn up. This was soon done and the trains and ambulances were got across, the rear being covered by two Brigades.

The column then marched towards the James River. As soon as the direction of their march was perceived by the Confederates, all interest in it was lost by them, their capital was safe and the column would shortly be under cover of the Northern gunboats on the James.

In a few hours Sheridan arrived at Hexell's landing where supplies, etc., were procured from the gunboats.

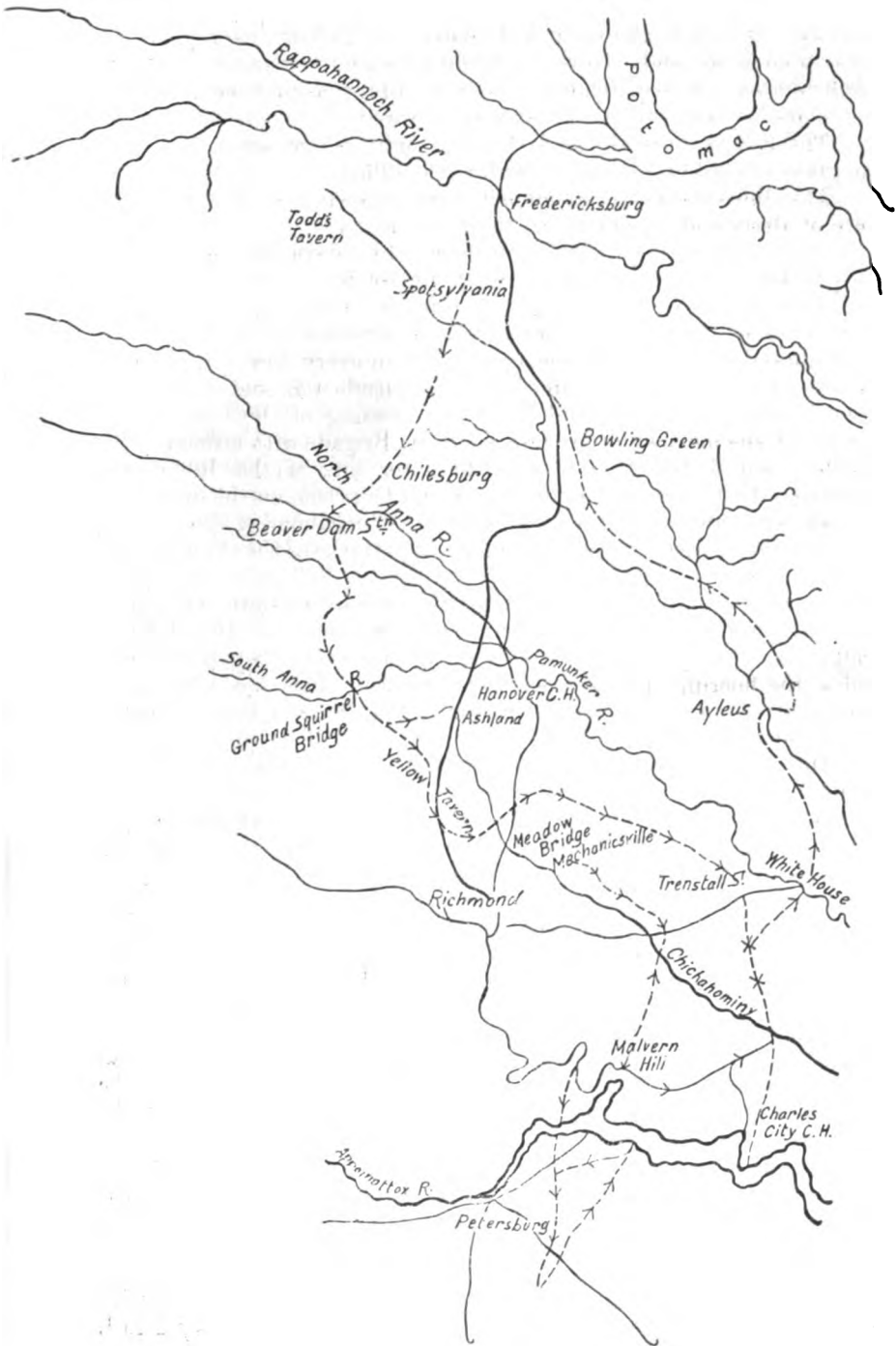
On the 21st Sheridan continued his march to rejoin Grant, crossed the Pamunhey near Whitehouse on the ruins of a railway bridge which took him six hours to repair, and rejoined Grant near Chesterfield Station on the 25th.

The expedition had deprived Lee's army of its eyes and ears whilst the battle of Spotsylvania was fought, damaged his communications, destroyed an immense quantity of supplies, killed the great leader of his Cavalry, subsisted for nearly three weeks on the Confederates, and perfected the moral of the Cavalry Corps.

Sheridan's casualties were 625 men killed and wounded and 300 horses. The loss in horses if correctly reported is extraordinarily small.

PARTISAN SERVICE.

After the battle of Fredericksburg had been fought, both Federals and Confederates went into winter quarters, confronting each other on the Rappahannock River.



5 10 15 Miles

At the beginning of 1863, Colonel Mosby not being disposed to remain idle, asked General Stuart for a small detachment of about 20 men to beat up the Federal lines defending Washington.

The Federal outpost line ran in a semi-circle from the Potomac below Washington to the same river above that place.

The main army of the Potomac being well in advance on the Rappahannock, these outposts had become slack and Mosby meant to take full advantage of this.

Mosby with his few men worried them to such an extent that the planks of the bridge across the Potomac were taken up every night to prevent him getting into Washington.

Early in 1863 Hooker who was commanding on the Rappahannock asked that the Cavalry Division, which was on outpost duty round Washington, should be sent to join his army. This request was refused as it was considered necessary to retain it to keep open the lines of communications from Washington to the Rappahannock. In spite of this, however, Mosby burnt a supply train within less than two miles of the Cavalry Camp, and within a week crossed the Potomac and captured a Cavalry Depot Camp at Seneca.

In February 1863, Mosby got information that the General Commanding the Troops in front of Washington was at Fairfax Court House with the Officer Commanding the Cavalry Brigade in that section and he determined to break through the Federal line and endeavour to capture these two officers. A deserter from a New York Cavalry Regiment which formed part of this Brigade afforded him valuable information, but before accepting this man's *bona fides*, he tested both him and his information in a minor enterprise in which the man's behaviour convinced him that he could be trusted.

On March 7th he started with 29 men on his venture. He got through the Cavalry piquets between Centreville and Chantilly without being seen.

Once inside the line of piquets, things were comparatively speaking easy, as in the dark his Command would be taken for a Federal party. On arrival at Fairfax Court House he sent a squad to the house occupied by Wyndham, the Cavalry Brigadier; they failed to catch him as he had gone into Washington that night, but they caught his two Staff Officers. He himself with 6 men went to General Stoughton's quarters, knocked at the door, an officer came and asked who was there, Mosby answered that he was the bearer of important despatches to General Stoughton, he was then taken to General Stoughton's room and on entering said, "Wake up General, my name is Mosby, Stuart's Cavalry are in possession of this place and General Jackson holds Centreville." His motive being to impress on Stoughton the futility of resistance, as in addition to several thousand troops in villages round, there were Federal troops in the village itself. When Mosby came out of the house with Stoughton he found his party collected with prisoners and horses, the former out-numbering his men by 4 to 1.

The cavalcade immediately started off in the opposite direction to that which they intended to take. After going a short distance they turned off the road, went round the Cavalry Camp and struck the road to Centreville. In the dark it was difficult to distinguish the grey uniform of the Confederates from the blue of the Federals, so the prisoners did not grasp how few their captors were. They were sent along at a trot, Mosby following in rear, a trooper leading Stoughton's horse being in front. They were not followed, as it did not strike the Federals that Mosby would move down the main road to Centreville where 3,000 Federals lay.

At daybreak they were within a mile of Centreville and arrived at a place where they knew a Federal piquet was posted at night.

Fortunately for them this piquet had moved off to its camp a few minutes before they arrived. (The wires in every direction had of course been cut.)

They had now to pass between Centreville and the camps outside the town and it was getting light. The party passed a few hundred yards outside the Forts from which they could be plainly seen, but were probably taken for a Federal scouting detachment going out. In front of Centreville and within easy range of its guns was a stream which, swollen with the melting snow, was unfordable; there was no time to hesitate, Mosby plunged in and swam across, his men and prisoners followed. They were now practically safe from pursuit and eventually handed over their prisoners to General Stuart at Culpepper Court House.

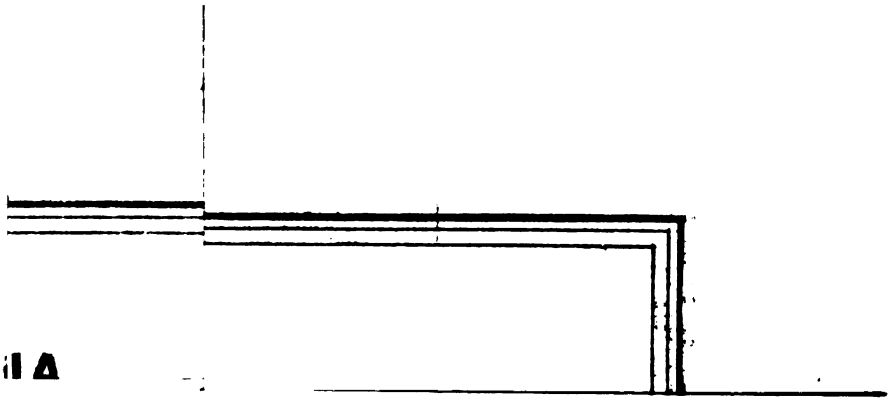
The results of Mosby's activity were quite out of all proportion to the number of men employed, and were far wider than the mere capture of a certain number of men and horses. The Federals had wished to rest men and horses, but Mosby kept an entire Cavalry Division constantly on the alert. Their efforts to catch him broke down large numbers of horses, and finally, when this Cavalry Division was wanted at the front, it had to be detained on the lines of communication.

To sum up the lessons of the Civil War for Cavalry which in a very large measure stand good to-day:—

- (1) The great value of dismounted service—to get the best results from which
- (2) Cavalry should be armed with a good rifle, but
- (3) Cavalry must be able to act mounted, therefore a sabre or lance must be added.
- (4) Improvised Cavalry cannot be trained during a Campaign to manœuvre effectively mounted in large bodies.
- (5) That mounted rifles (given suitable material) can be quickly trained but that valuable opportunities will be lost by them through want of cohesion, discipline and ability to manœuvre.
- (6) That raids unless one force is considerably stronger than another should only be used with great discretion

(this does not refer to Cavalry reconnaissances to procure information), but that for over-running a country to subdue it by exhausting its resources they are effective.

- (7) That the importance to an army of the efficient performance of outpost, screening and reconnoitring duties cannot be over-estimated.
- (8) That Generals who can combine the use of the three arms on the battlefield are extremely rare.
- (9) That when armies are halted a few enterprising men can cause inconveniences and loss to an enemy out of all proportion to their numbers.



1A

DISTRIBUTION OF INTELLIGENCE.

BY 2ND-LIEUT. T. C. FOWLE, 1ST R. M. FUSILIERS.

The subject of Intelligence treated as a whole seems to be neglected in most Military works. We hear that Napoleon, or Wellington, or Stonewall Jackson, or some other General did this, that, or the other, and so achieved a brilliant success. But we look in vain, as a rule, for any explanation as to how he knew that his opponent had taken up such and such a position, or had so many men, or intended to pursue a certain course of action. If we did, it is probable that we should often find that certain successes (?) at present attributed to flashes of intuitive genius, might with more justice be ascribed to a well-organised Intelligence Department. And if the subject of Intelligence is neglected, one part of it seems to be especially relegated to oblivion, *i.e.*, its distribution. Thus we do see discussed occasionally in Military works the importance of an Intelligence Department either as a general question or with reference to some campaign. But the writer stops short at the collection of information by spies, the questioning of inhabitants, the use of Cavalry, etc., the distribution of the intelligence thus gained, he, as a rule, leaves severely alone. Yet this point is a most important one both in peace and war. The Intelligence Department in London, St. Petersburg, or Simla may be able to say "We know all about our friend the enemy. His available troops number so and so; maps of his country are in our hands; his resources are as well known to us as our own; his most secret machinations are docketed in our pigeon holes." This is very good; but surely this information is shorn of half its value if it is not known to the men on the spot. To the General who has to make his plan of campaign, to his staff who have to work out the thousand and one details connected with it, to the officers commanding units who want to know what to expect, to other officers who may have to fill various billets as casualties occur.

There is no innate value in information merely as such, any more than there is in food. Both are meant to be used. The officer commanding the base of an army, having collected his supplies, transmits them as quickly as possible to the front. The officer who is in charge of the Intelligence should do the same.

That this question of the distribution of Intelligence is no mere academic discussion may be seen from a single example. During the South African War, 1899—1902, especially during the earlier stages, our information regarding the Boers, their resources, their plans, their numbers, their armament, their country, was meagre and very often misleading. Without going into regrettable details it may be safely said that fully 60 per cent of our disasters, ranging

from the ambush of a patrol to the defeat of a brigade, can be attributed to faulty intelligence. It will be remembered that the Intelligence Department was much blamed for not collecting the information. The accusation would be more to the point if we substitute "Distribution" for "Collection." Several eminent authorities have since stated that the information had been collected and was in the hands of the authorities, but it remained pigeon-holed at the War Office. It was of course about as much use there to the forces in South Africa as so much ammunition would have been if it had remained in Woolwich Arsenal.

It may also be pointed out that too much secrecy has the bad effect in peace time of quenching interest in military matters. If no information is forthcoming to the general body of officers with regard to the probable course, a war against a certain enemy would take, if extremes, history, papers, etc., are based too much on campaigns of some centuries ago instead of on those of yesterday or those likely to occur to-morrow, if lectures on certain interesting subjects are made too confidential, interest in military matters is bound to become torpid. It is in matters of to-day that the Army is interested, in the enemy who is at our gates, in the country in which we may have to fight next month, in the campaign which may begin the day after to-morrow.

Of course, it is not suggested for a moment that important information should be scattered broadcast, only, that as much information as possible, and not as little as possible, should be distributed.

This essay by no means attempts to exhaust such a large subject as the Distribution of Intelligence, only the policy of secrecy has been so enlarged upon; the importance of not letting your right hand know what your left hand is doing has been so much emphasised, that perhaps this survey of the other side of the question, brief though it is, may not be without interest.

AUSTRALIAN TROOPS FOR INDIA : A SUGGESTION.

BY MAJOR A. T. ANDERSON, ROYAL FIELD ARTILLERY.

The difficulty experienced of late in making up drafts of British troops for service in India, and in inducing men already in the country to extend their service, betrays a somewhat serious state of affairs no possible remedy for which should be overlooked. The former half of the problem, chiefly due, I presume, to the decay of military spirit amongst the youth of Great Britain, depends for its solution on the authorities at home; with regard to the latter, various remedies have been tried, such as bounties, increased facilities for furlough, cheap passages home, and the like; and these measures, costly as they are, do not appear to be particularly successful. It is not my intention in this article to suggest any solution for these two important questions. Probably nothing more can be done than to wait like Mr. Micawber for "something to turn up," and meanwhile to go on doing all that is possible to better the condition and prospects of the soldier, and make his career a more attractive one.

But why should we be dependent only on the British Isles? Obviously we must be so for the great mass of our army, but is there any reason why we should not also tap the other sources of supply represented by our colonies? That any great number of men can be obtained from them, I do not mean to affirm, but I feel sure that the quality of such men as our colonies could produce would make, even a small number, a considerable asset in our military strength. My object in this paper is to suggest a means of drawing Australian recruits into the military service of the Indian Empire.

We hear the most various and conflicting opinions as to the value of Australian troops in the recent war in South Africa, ranging from the most extravagant laudation down to a very moderate meed of praise indeed; but I think it will be generally admitted by those imperial officers, who have had an opportunity of judging, that the Australian contingents contained excellent fighting material, and could, if properly trained and disciplined, be made quite equal to the best troops from the old country. There is one great and serious objection often raised against Australians as soldiers, namely, their want of discipline. This is undoubtedly true, and would seem to be a failing common to the youth of all new countries, but the difficulty is by no means an insuperable one. In an experience gained during three years' service in Queensland with the permanent troops of that colony, I learned that after about six months' training an Australian soldier becomes perfectly amenable to any reasonable discipline, and that in fact crime amongst men of over six months' service is to all intents and purposes non-existent.

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Once inside the line of pickets things were comparatively speaking easy as in the dark his Command would be taken for a Federal party. On arrival at Fairfax Court House he sent a squad to the house occupied by Ward and the Cavalry Brigadier, they failed to catch him as he had gone into Washington that night, but they caught his two Staff Officers. He himself with 6 men went to General Stoneman's quarters, knocked at the door, an officer came and asked who was there. Mosby answered that he was the bearer of important dispatches to General Stoneman, he was then taken to General Stoneman's room and on entering said—

Wake up General, here comes Mosby. Stuart's Cavalry are in possession of this place and General Jackson is at Centreville. Having to be going to General Stoneman the necessity of resistance was in vain, the soldiers of the outpost troops having no more than were Federal troops in the vicinity of it. When Mosby came out of the house with Stoneman he had 41 of his party collected with prisoners and he saw the time not in burning his men by 4 to 1.

The cavalcade immediately started off in the opposite direction to that which they intended to take. After going a short distance they turned off the road, went round the Cavalry Camp and struck the road to Centreville. In the dark it was difficult to distinguish the grey uniform of the Confederates from the blue of the Federals, so the prisoners did not grasp how few their captors were. They were sent along at a trot, Mosby following in rear, a trooper leading Stoughton's horse being in front. They were not followed, as it did not strike the Federals that Mosby would move down the main road to Centreville where 3,000 Federals lay.

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When the recruit first joins, it must be admitted, his sense of discipline is deficient to an extent that is absolutely laughable. He reminds one of a young colt, subjected for the first time to another will, and the idea of having to obey any man, or to address any fellow creature as "Sir," seems to startle, and almost to frighten him by its absurd unreasonableness. However, as I have said, this feeling gradually wears off, and the man being as a rule fairly well educated and a sensible young fellow enough, soon sees the object and necessity of discipline in a body of soldiers, and learns to accept the situation loyally. I give the necessary period of training as six months, and I cannot deny that the first two or three are months of storm and stress for the young recruit, and of much vexation of spirit to his officers; in my time desertions were frequent during this period—the more so no doubt as deserters were very rarely recaptured—while cases of desertions after six months' service were almost nil. Once the discipline difficulty has been mastered, I believe there is no steadier, keener, and more trustworthy type of man in the Empire, and the Royal Australian Artillery, composed as it is of men of splendid physique and more than average educational training could, when I knew it, and doubtless can still, take its place worthily beside the best of our own batteries and companies of the Royal Artillery.

Now it would be unreasonable to expect colonial young men to enlist in the Imperial Army for general service all over the Empire, and thus to sever themselves completely from their homes for the whole period of their engagement. Even if men could be found willing to serve under conditions of pay which to the Australian would appear altogether inadequate, still the expense to the Imperial Government, in bringing men to England and sending them back at the end of their service, would be so great as to render the scheme impracticable. The same objections would not, however, occur if these men were engaged for service in the Indian Empire only. They would then be within easier reach of their homes—not from the point of view of time, it is true, but as far as the cost of the journey is concerned—than their comrades of the British Army in India; and if special concessions as to furlough were made, as indicated below, they would not feel that they were cutting themselves off from their native land in accepting service under the Government of India. Probably the objection will occur to some who read this article that as the labouring man in Australia can command such high wages, he is not likely to be tempted to serve in India unless by the offer of a much higher rate of pay than the Government would be prepared to give. I think, however, that the general idea of colonial prosperity is rather exaggerated; certainly those men who are lucky enough to obtain employment as labourers under Government receive wages which would seem enormous to the British workman, but the number of these fortunate ones is necessarily limited, and even with them the high cost of rent and clothing discounts a good deal from the value of their earnings. There is

however a very large class of men who have to be content with far lower than the recognised Government wages, and ten shillings a week, including board and lodging, is no uncommon payment to be given to a "handy man" or "gardener." There is also a large and, I fear, increasing class, who can get no work at all.

It may be conceded, however, that these men should be paid at a somewhat higher rate than is now received by British soldiers, and this might be the more fairly allowed in a case such as this, when the soldiers would be serving for the whole of their time in India. It would not be feasible of course to give different rates of pay to men serving in the same unit, and this brings me to the chief part of my scheme, namely, that the recruits from Australia should be formed into a corps of Australian Mounted Infantry. That men in one branch of the service should receive more pay than those in another branch is no new doctrine in the army, and would give no cause for jealousy and invidious comparisons. It is not within the province of this article to enter into details as regards the composition of the proposed force; the question of mounted infantry organisation has been ably discussed by Major Wood, 99th Deccan Infantry, and by Captain Forster, Royal Warwickshire Regiment, respectively, in their essays published in the July number of the *Journal of the United Service Institution of India*, and there seems no reason why a body of permanent Australian Mounted Infantry should not find a place in one or other of the two schemes put forward by these officers. The force might consist as an initial experiment of a battalion of four companies with a total strength of about 500 all ranks. These and other details would of course require careful and expert consideration, but I would suggest some such system as the following:—

- (a) Pay to be at the rate of sixty rupees a month consolidated pay for privates, with proportional increase for the various non-commissioned ranks.
- (b) Term of service four years. Men to be given the option at the end of three years of extending to a total of seven years' service; those men who so extend to be given six months' furlough on half pay with a free passage to and from any of the chief Australian ports. It would probably be possible to arrange with the British India or some other steamship company to provide passages at a reduced rate on a steamer leaving India at the beginning of the hot weather and on one returning from Australia in about the middle of September.

Recruits might be enlisted under arrangements with the Commonwealth Government at the various military centres, either from the general public, or, preferably as I think, from the Militia and Volunteer forces, and sent to India in drafts, as soon as a sufficient number is available. Perhaps it might be convenient to arrange for, say, two ships a year to run from Australia to India, starting at Albany and calling at each of the principal ports as far as

Brisbane to take up drafts, proceeding thence to Calcutta *via* the Torres Straits; recruits should be entertained not more than a week before the date of sailing. In any case there should be as little preliminary training as possible in Australia, *as a permanent soldier under strict discipline*; as I have said above the average Australian hates discipline at first, and it would be well to have the recruit safely in India before his military zeal is put to this severe test.

I believe that if the advantages of the service were once thoroughly realised there would be no lack of candidates for enlistment in a force of this sort, and of candidates, too, full of patriotism and military ardour, and inured to hard open-air work in a hot climate; but it would be necessary to insist strongly from the very start on a high standard of character and good educational qualifications. To mention this now may seem rather premature, but it is really a matter of the first importance. Young men are swayed to a great extent by the advice of their parents and relations, even in Australia, and once a corps gets a bad reputation we may give up all hopes of attracting respectable men into its ranks; if on the other hand it possesses a reputation for decent behaviour and sobriety, men of the respectable middle classes will join its ranks readily enough, with the full approval of their relations and friends.

The officers of this corps should be men of tact and *savoir faire*, as the young colonist requires careful handling at first, and should be specially selected from the Imperial Army, preference being given to Australians when available. To attract a good stamp of officer staff pay might be given, as is now done in the case of Royal Artillery officers employed with native mountain batteries. It would also be a good plan to offer some special facilities for obtaining commissions through the ranks of the Australian Mounted Infantry. There are a great many men of adventurous spirits, and good birth and education, now scattered about in the colonies, who have failed through no fault of their own to make a competence, and who would jump at the chance of gaining a commission in the army by a few years' service in an Australian Corps.

There remains an important consideration; the attitude of the Commonwealth Government, without whose active and genuine sympathy there could of course be no chance of carrying out the scheme successfully. In this matter I can only give my personal opinion, but I cannot think that the experiment would meet with anything but their approval. In fact, so great are the advantages that would accrue to Australia that it seems to me quite possible that the Government might be willing to bear some part of the cost. At the present time, at least, Australia is by no means underpopulated, and it is a sad fact that the number of unemployed is considerable. There could then be little objection, I should imagine, to a plan which would provide employment for—at the commencement—about 500 young men without permanently removing them from their country; for it must be remembered that

many of these men would return after four years, and the rest, a majority let us hope, after seven years, still young men in the prime of life, trained and disciplined in habits of steadiness and sobriety, and with a hundred pounds or more in their pockets. Many no doubt would devote their savings to the purchase of small selections, and go to swell that class of small farmers which the Commonwealth Government are so laudably anxious to foster and encourage ; and I need hardly point out what a valuable addition these retired soldiers would form to the forces of the Commonwealth in time of need.

Such briefly is the scheme I would suggest. I am well aware that many objections may be urged against it, particularly from a financial point of view, but I am none the less convinced that a splendid body of men might be formed out of the fine fighting material that is to be found in the towns and back-blocks of Australia. I might say much on the value from the standpoint of imperial politics of a scheme such as that which I have indicated above, on the advantage of allowing the colonies to share in something more than the merely local defence of their own corner of the Empire, and on the good effects likely to result from the association of colonial with British troops. These are, however, considerations which will suggest themselves to every mind without any promptings from me, and I am content here to base my proposals simply on the practical ground of their military value to the Indian Empire.

RECRUITS AND RECRUITING IN THE INDIAN ARMY

BY CAPTAIN S. MORTON, 24TH PUNJABIS.

[The following notes and suggestions, though largely applicable to men of all enlisted classes, refer more particularly to the Punjab, from which our best fighting material is drawn. Similarly, the Infantry Regiment is taken as the type, being that most largely represented in the Army.]

I.—THE QUESTION OF RECRUITING GENERALLY.

It may be of interest to glance, in the first instance, at the principal reasons which combine to induce the youth of India to adopt a military career. These, properly understood, will influence the selection of men for, and the instructions given to, recruiting parties.

It can safely be asserted that the inducement to enlist does *not* lie in either the pay or the pension rules in force in the Indian Army. A sepoy receives Rs. 9 per month, plus a varying compensation allowance for food, when the market price of the latter rises above a certain fixed standard for specified articles of diet. This rate of pay was laid down in the days when the actual work performed by a soldier was—compared with the present time—merely nominal. Two parades, of an hour's duration, per week, a review twice a year, and a limited amount of sentry-go, may be taken as a fair estimate of his military duties as they used to be. The physical tax involved was so slight that a sum of Rs. 4 or Rs. 5 per month, expended upon food, sufficed to keep him in fit condition for performing his tasks. Now, however, with several hours' parade a day, constant field-days and manœuvres (in the cold weather), and various fatigue and other duties more or less wearying, a man is unable to stand the strain properly without spending Rs. 7 or Rs. 8 per mensem on his stomach. His clothing—both uniform and mufti—is subject to several hundred per cent more wear and tear than formerly. The recent addition to the sepoy's Kit Allowance, bringing it from Rs. 40 (until quite recently Rs. 30 only) to Rs. 60 and giving him a special "Boot Allowance" of Rs. 5 a year, in addition to the annual sum for the general up-keep of half-mounting articles, is a most welcome one, and goes far towards doing away with the grievance last mentioned. Still, as a matter of hard fact, it may be stated that even in the cheapest Punjab Regiments the cost of a recruit's preliminary outfit will swallow up the whole of the sum allowed, while, in the great majority of Regiments, even Rs. 60 will not cover the necessary outlay.

If it be remembered that an unskilled workman can easily command his Rs. 12 a month, and in certain places—as, for instance,

Simla, where hill men of enlisted classes frequently work during the hot weather—anything up to Re. 1 *per diem*, it will be obvious that it is not high pay which attracts the would-be soldier.

To take now the subject of pension. Until recently, a pension of Rs. 4 *per mensem* could be obtained by a sepoy, after a total period of 15 years' service. Now, however, in order to earn a similar amount he is required to put in an extra six years, while the work he is expected to perform increases yearly. It will be found, on taking statistics, that only a small percentage of men enlisted qualify for this pension, and it may be doubted even whether 50 per cent of men *join* the colours with any idea of completing the requisite period of 21 years. Hence, the question of pension may also be dismissed as forming a general incentive to military service.

We will now deal with those predisposing causes which do incline to attract the raw material. Briefly stated, these are—

- (1) The glamour of military life.
- (2) Domestic reasons, such as heredity of Army service, family feuds, overcrowded households, and so on.
- (3) Increase of social standing.
- (4) Ambition.

(1) Young blood is easily fired with tales—more or less highly coloured—of the attractive side of regimental life, of new stations and countries to be seen, of the opportunities for distinction, and of the excitement of active service. Further, like his brother-villager in England, Jack Sepoy rather “fancies” himself in uniform (before he is enlisted).

The one article of uniform which a sepoy very frequently wears when on leave, *viz.*, a pagri of regimental pattern, has an extraordinary power of fascination for his simple caste-fellows. A khaki or blue *safa*, tied after some particularly seductive regimental pattern, is by no means an unimportant factor in influencing the number of recruits which a Regiment attracts. The neater the pattern, the greater the attraction. To give an example: The pagri, which is somewhat loosely tied, has to be kept in position by some more tightly-fitting article underneath it. This article, in the case of a Muhammadan, is a *kullah* (peaked cap), in the case of a Hindu either a skull cap or a small *pug* of red cloth, several yards in length, wound neatly round the head, and displaying, when the pagri is tied on over it, from three to eight overlapping folds in the centre of the forehead. Now, *ceteris paribus*, a Regiment adopting the *pug*—which is unquestionably the neater-looking of the two—draws far more recruits than one in which the skull cap is in vogue.

(2) Many families have, in an unbroken record of several generations, always produced one or more members for military service, and, needless to say, these form a very useful backbone to the Native Army. But it more commonly happens that domestic reasons totally unconnected with heredity are responsible for the supply of some of our best material. A household, for instance, with only a limited amount of land under cultivation (for most of our enlisted classes are

farmers), and with (say) half-a-dozen able-bodied brothers, can barely support itself, unless two or three of its members earn their bread in outside pursuits, and these will generally choose military service in preference to anything else, as being likely to gratify their tastes and at the same time afford them a means of livelihood.

Again, long-standing family blood-feuds are, among the Afridis, responsible for bringing many a fine lad to the Colours, who would never have joined them had he not found his own country rather too hot to hold him for the time being.

(3) It is extraordinary to note how an agriculturist who has enlisted seems to step at once on to a higher social platform in the eyes of his countrymen; and the further removed his district is from railways, large towns, and civilisation generally, the more marked becomes the distinction made. I have frequently noted with astonishment, in remote hill districts, what *deference* is paid to a brother of the sword by his brethren of the spade. When he visits his home on furlough, his relatives treat him as an honoured guest; he is not expected—indeed hardly allowed—to take any part in the usual family routine of work; his opinion on any matter is listened to with respect. In fact, almost the only statement which his friends find hard to believe is his explanation of his inability to save more than the trifling sum which he has brought for the benefit of the family exchequer. It is a popular idea among his countrymen that to become a soldier is to amass wealth. The prevalence of this notion is, no doubt, partly due to the fairy tales which Recruiting Parties sometimes find it necessary to invent, in order to attract a sufficient number of youths of the proper type. There is no doubt that the explanation of this increase of social standing which a sepoy acquires—especially, be it said again, in remote regions where a white man is rarely, if ever, seen—lies in the fact that he has become a direct protégé of the *Sarkar*. Does he wish to make any representation regarding a case of “zulm” on the part of the Police towards his family, to apply for Government forest wood to build him a house, or for a license to carry a gun—his application is ensured attention, by the all-potent signature of his C. O. who forwards it on. Does he desire to prosecute or defend a case, he is sent on a month's leave, with a letter from his C. O. asking that the case may be definitely decided within that period. Should he even get into hot water with the Civil Power, the *Sarkar* (as represented ever by the “Colonel Sahib”) backs him up, if to do so is compatible with justice.

(4) Lastly, ambition. This, though by no means the least important, is not, perhaps, a very generally predisposing cause of enlistment. Ninety per cent of recruits enlisted are entirely illiterate, and the ambition to rise in their profession will, at best, only come after several years' service in the ranks, combined with a good deal of unpalatable instruction in the Regimental School. In fact, as already noticed, only a comparatively small percentage of men enlist with any idea of completing the full term of 21 years

service. More especially is this the case with the Afridi, who is of an extremely restless disposition, and finds three or four years of uneventful cantonment life, unbroken by the excitement of active service, well nigh unbearable.

On the other hand, there certainly are men who do enter the service with the deliberate aim and idea of some day attaining to the dignity of a Commission. Indeed, it would be difficult to explain, on any other grounds, how the small wage of a private soldier can attract a well educated man—such as is to be found occasionally in the ranks—seeing that he could command a far better income as a clerk, or in some independent venture.

The raising of new Punjab Regiments during the last few years, together with the reconstitution of a number of Madras Regiments, in favour of the Punjabi element, has seriously strained the resources of certain recruiting areas; and a Regiment—more especially a “Class” Regiment—does not obtain its annual complement of recruits of good physique, without considerable trouble. The liberal concession made to the Native ranks, in the matter of leave and furlough, are much in favour of recruiting generally, but still the question resolves itself finally into one of supply and demand pure and simple. Had not several practically new sources been tapped, and the minimum standards of height been lowered in certain cases, the reconstitutions and additions indicated above could not have been carried out in their entirety, from simple lack of material.

It follows, then, that a Regiment which has a good connection, and enlists none but a good type of recruit (of whatever class), and which, further, devotes some trouble to the selection and working of its Recruiting Parties, will score in the end.

II.—RECRUITING PARTIES.

A great deal may be done in the way of enlistment, by encouraging men proceeding on leave or furlough to bring back recruits with them. This method, as far as it goes, is in many ways more satisfactory than the employment of regular Recruiting Parties.

For one thing, a leave man will probably only bring back such recruits as are related to or personally known to him, and consequently he can more justly be held responsible for their future good behaviour. Secondly *esprit de corps* is fostered thereby, for the more a Regiment becomes a collection of families, so to say, the more naturally will the whole work together as one harmonious community.

If the Regiment is at or near the recruiting centre, a man will often voluntarily bring a “bhai-band” back with him for enlistment, risking the possibility of his being rejected on medical grounds, and of he himself having to pay the return fare. But when the Regiment is at a distance from its recruiting centre, this procedure is impracticable. A standing Regimental Order might be issued to the effect that any man proceeding on leave or furlough, and desirous of bringing back one or more recruits for enlistment, should apply

to the Adjutant, who—if there are any vacancies for men of that particular class—will fill up and give him a printed Memorandum for the Recruiting Staff Officer concerned. The printed form might be somewhat of the following type :—

No. — Station — Date — 190 .
 FROM ———— To —
 COMMANDING THE R. S. O.
 For ————

MEMORANDUM.

I request that you will be good enough to examine recruits up to ——— in number brought by the marginally named $\frac{\text{man}}{\text{men}}$ of my Regiment on $\frac{\text{his}}{\text{their}}$ return from $\frac{\text{leave}}{\text{furlough}}$ sending me their Nominal Rolls.

They should fulfil the following conditions, *viz.* :—

- | | |
|---------------------|---|
| SIKHS | ... To be Jats of Manja or Doaba Districts, minimum height 5'-7½", chest 33", age 17—22 years. |
| DOGRAS | ... To be Rajputs of Kangra District, minimum height 5'-5½", chest 32", age 16—21 years. |
| AFRIDIS | ... To be Malikdin, Kamar or Kambar Khels of Tirah, minimum height 5'-5", chest 33", age 17—22 years. |
| PUNJABI MUHAMMADANS | ... To be Rajputs, Ghakkars, or Awans, of Jhelum or Rawalpindi Districts, minimum height 5'-8", chest 34", age 17—22 years. |

Discharged sepoy should not be brought for enlistment.

LIEUT.-COLONEL,

Commanding ————

A man should be allowed as many days' extra leave as will cover the extra time taken in proceeding to the R. S. O.'s Headquarters and getting the recruits examined, previous to his return to the Regiment. If the recruit is not passed, the "Nominal Roll" sent by the R. S. O. will be sufficient guarantee that the sepoy did actually present himself at the Recruiting Office.

The Adjutant should keep a note-book in his office, in which he notes the number of recruits whom leave and furlough men have been empowered to bring; otherwise, he may find, when too late, that the Regiment, or some particular class, is over the authorised strength. The entries would be very simply made, as :

No. 9999 Sep. Sundar Singh, B. Coy., 2 recruits, 3 days' extra leave.

Let us now consider the usual procedure adopted by a Recruiting Party sent out. It consists of perhaps 15 men—3 N.-C. O.'s and 12 sepoys. These, after an absence of possibly $1\frac{1}{2}$ months, return having enlisted their required number of 30 recruits while as many or more have been rejected by the R. S. O. The recruiters state that, owing to the cutting of crops, competition with Recruiting Parties of other Regiments, etc., they have not been able to make up their full tally sooner. Unless a British or Native Officer, having some knowledge of the recruiting area concerned, and of the conditions obtaining there, accompanied the Recruiting Party, there is absolutely no means of checking the truth of these statements. The probability is, however, that not a man of the Recruiting Party has walked more than 20 miles from his own doorstep, and that the men have simply enjoyed a welcome period of extra leave at Government expense, while they will certainly have made a fairly good haul out of the annas $4\frac{1}{2}$ *per diem* pay allowed to each recruit from the day his name is entered in the recruiter's note-book. A recruiter brings a recruit before the R. S. O., informing the latter that the recruit was enlisted by himself (say) 20 days previously. The recruit is perhaps rejected, when the sum of Rs. 5-10-0 due to him will, later on, be paid over to the recruiter, who is supposed to have expended this maintenance allowance in feeding his charge. The boy himself does not, in any case, understand that he is entitled to any pay, of course; but the facts of the case probably are that he has been living at his own home, and at his own expense, for 15 or 16 days, and that his food for the few remaining days has not cost the sepoy more than $2\frac{1}{2}$ annas or so *per diem*. If the recruit is finally approved, and sent off to join his Corps, the man who enlisted him still gets the amount of pay in question, which is always drawn through the Regiment. Another trick, of which an old hand is very fond, is that of bringing up several recruits whom he *knows* to be under measurement or otherwise unfit, so as to get his usual pound of flesh from each on rejection. If a recruit brought up for inspection is palpably unfit, the R. S. O. will sometimes disallow the whole of what the recruiter has spent (or pretends to have spent); but he is naturally reluctant to do this too freely, consequently the recruiter, even if "caught out" once in a way, finds the game much too paying to amend his ways.

Let us consider how these irregularities can best be remedied. In the first place, no man should be sent as one of a Recruiting Party, who cannot certify previously that he knows personally of two or more boys who are likely to fulfil the necessary conditions as to height and chest measurement, etc., and are willing to enlist. When a Recruiting Party is to be sent out, names of volunteers can be called for, the foregoing condition being attached. A sufficient number of names will probably be forthcoming, to give a certain field of

selection. If the party is to be a large one, and a number of recruits are wanted, a British Officer (who would, however, rarely be available), or a Native Officer, should be sent in charge. In any case let each man in the Recruiting Party clearly understand that a period of (say) three weeks is not to be exceeded, and that the whole party must return by the specified date. The period will be long enough to give the recruiters some days to spend at their homes, and to produce extra recruits for replacing any rejected by the R. S. O.

Secondly, there should be certain fixed rules regarding the disposal of the pay due to recruits (enlisted or rejected). These rules should be carefully drawn up in consultation with Native Officers of the classes concerned, and incorporated in the Regimental Standing Orders. The points to be decided are—

(1) Taking a fair average, for how many days will a recruit necessarily be away from his village and under the personal charge of the recruiter ?

(2) What is a fair allowance for feeding one recruit *per diem* ?

This last question can either be specially decided (in consultation with Native Officers) each time a Recruiting Party is sent out, or a sum can be permanently fixed, which will be sufficient in a bad year when food is expensive, and will allow the recruiter some margin of profit in a good year.

The sum fixed must, of course, in no case exceed annas $4\frac{1}{2}$ *per diem*.

The above points having been decided, the amount which a recruiter is entitled to "charge" for each of his recruits can be easily calculated, the R. S. O. being requested to have paid before him by the recruiter to each rejected recruit, the balance (if any) of the annas $4\frac{1}{2}$ *per diem up to the fixed number of days*, and the *whole* of the pay for any period over and above this; the balance, in the case of an approved recruit, will, of course, be drawn and paid to the latter by his Regiment.

It must be remembered that one fixed rate cannot be laid down for all classes indiscriminately. The ruling will depend upon—

(1) The extent of the particular recruiting area concerned.

(2) The average distance to be traversed on foot, before reaching the railway.

(3) The number of recruits a single man is usually expected to bring. (The larger the number, the longer will the recruits take in collecting, and consequently the greater the average allowance of time which should be made to the recruiter for keeping them in his personal charge.)

(4) The delay usually caused at the recruiting centre.

An Afridi from Tirah, for instance, will cost more than a Dogra from Kangra, and the latter, again, more than a plainsman.

Let the rules be sufficiently liberal. If the recruiter does make a little profit, no harm is done, but the conditions should be such that he is never actually out of pocket. The object is solely to

prevent the recruiter from making a large profit at the recruit's expense, and from employing methods which enable him to "do" the State out of considerable sums (paid on account of unfit recruits deliberately produced); he already has the solid advantages of visiting his home at Government expense, and of drawing special "batta" during the period he is on recruiting duty.

The above system will give the R. S. O. a certain amount of trouble as regards the calculation of amounts due, but he will probably make no objection, in fact will, no doubt, be pleased that the recruits' interests are so well safe-guarded. A printed summary of the rules for Recruiting Parties should always be sent him, at the same time that the usual intimation of the despatch of the party is made, together with a polite request that he will pay rejected recruits the proper amounts due to them—the money being, of course, taken out of the advances given to the members of the Recruiting Party. The system will, if carefully worked out, be found to produce entirely satisfactory results, and the keenness of men to be sent on recruiting duty will be sufficient proof that their lawful interests in no way suffer.

POINTS TO BE OBSERVED, AS FAR AS POSSIBLE, IN CHOOSING MEN FOR RECRUITING PARTIES.

The men selected should not only be good soldiers, but should be smart in dress, and of good physique and appearance; they should, in fact, be solid advertisements of the health and strength gained under a military régime.

A judicious sprinkling of long and short service men will be found to answer well. A smart young sepoy, with only a couple of years' service to his credit, keen on his work and anxious to get on, will do his very best to produce good men, for his own sake. The men must be given a sufficiently large advance of money to enable them to pay off rejected recruits, and feed their charges, etc., and will, of course, render an account on the basis of the rules fixed on their return.

The rules as to payment of recruits, etc. (enumerated above), should be read and carefully explained to each member of the party.

Men who bring particularly fine recruits should be rewarded by being selected, on the next occasion, for the same duty, while a man who consistently brings weedy and under-sized boys for enlistment, should be permanently barred from recruiting duty.

Each man should be given a length of measuring tape and a measuring stick. The latter can be turned out very cheaply by the regimental carpenter.

The men should be reminded of the necessity for enhancing verbal persuasion by the wearing of clean clothes and a regimental pattern pagri, and the minimum measurements required in a recruit should be impressed upon them.

The presence of a competent British Officer, with a Recruiting Party, will be of immense advantage, not only in stimulating his

own men, working under his eye, to do their best, but also—especially if he be personally acquainted with the district—indirectly attracting recruits. Unfortunately, a British Officer can seldom be spared for this duty. An officer, however, who is keen enough to spend his annual two months' privilege leave, now and again, in working through a recruiting district "on his own," will gain a large amount of useful knowledge at first hand, and at the same time do his Regiment a decidedly good turn in the recruiting line. If there are no immediate vacancies in his Regiment, he can easily arrange to keep a list of likely youths met with, and these can be sent for as occasion requires. Provided they have not to wait very long, they will probably be proof against the wiles of any Recruiting Parties who may knock up against them in the meanwhile.

It is, of course, the business of a Medical Officer to determine the medical fitness, or otherwise, of a recruit; but our British Officer on tour will find it an advantage to be able to apply the following simple tests to a would-be recruit, before entering him up as provisionally eligible:—

- (1) Drawing down the eyelash, note the colour of the eye below the eyeball. If, instead of being red, it is almost white, or colourless, the subject is anæmic, and should ordinarily be rejected.
- (2) A discoloration of the skin of both cheeks, about midway between ear and nose, implies that the man has been suffering continuously from malarial fever.
- (3) Rub the man's lips gently against his teeth; if the gums bleed, he is suffering from scurvy.
- (4) When both heels and both toes are brought together, it can be seen whether the subject is knock-kneed; if so he is unfit.
- (5) Make the man stand with his legs fairly wide apart, and, toes pointing straight to the front; then note whether the instep is arched or not; if flat-footed, reject.
- (6) Note whether there are any obvious varicose veins.
- (7) Disjointed fingers or toes, and broken teeth, should also be looked for.
- (8) Curvature of the spine is shown by the unequal height of the two shoulders, when a man is standing upright. Care should, however, be taken not to conclude hastily that he is suffering from this, as he may be merely standing awkwardly.

A recruit need not *necessarily* be rejected on account of anæmia, scurvy, or slight curvature of the spine. The former may have been caused by constant working (or overworking) in unhealthy surroundings, and the scurvy by bad food, and either will probably quickly disappear under more favourable circumstances. Many men will be found to have slight curvature of the spine, due generally to continual carrying of loads, and this in itself should not be sufficient to disqualify an otherwise good recruit.

There are, perhaps, two special cases in which the minimum standard of height or chest measurement might with advantage be relaxed :—

- (1) In the case of a man in the Regiment desiring to enlist his own brother. Provided the latter is otherwise fit and strong, the fact of his brother being a good soldier in the Regiment might well be allowed to decide the balance in his favour.
- (2) Owing to the competition between Regiments, for good recruits, on account of the scarcity of the supply, a British or Native Officer might always be allowed *personally* to decide on bringing up before the R. S. O. a young growing lad, fit for regimental work, and giving promise of developing another inch or two, even though he should be under the minimum standard at the time. There is no doubt that many a good recruit is lost to a Regiment which lays down a hard and fast rule in this respect, and he is quickly snapped up by another Regiment not so particular, or more far-seeing.

THE CONDITION OF VOLUNTARY MILITARY SERVICE IN INDIA.

BY CAPTAIN W. HAWKINS, 1ST PUNJAB VOLUNTEER RIFLE CORPS.

"I hold that in India every Englishman by birth or descent owes it as his duty to his country to become an efficient volunteer."—(LORD KITCHENER at Calcutta, 1903).

"On the occasion of Lord Minto's arrival last week, *for some reason or other*, the adults of the Battalion were unable to furnish a guard-of-honour at Government House."—(*Englishman*, November 1905).

"The other view of the volunteers, and the one which we believe to be the only sound one, is that they are capable of performing three most important functions in the national life. The first of these is to act as a national school of arms in which, without compulsion and without incurring the dangers of militarism, our citizens may learn that without which no man is fully a man, namely, how to defend his home and his country in case they are threatened by foreign invasion."—(*Spectator*, September 25th, 1905).

"It is only from men who feel that they can be of some service that volunteers can be expected, even in the most patriotic nation."—("Times" History of the Boer War, Volume III).

Perhaps some excuse will be expected for opening an article on volunteering in India with four extracts, such as those produced above. Well, one excuse is that each in its way touches a particular phase of volunteering; and, culled as they are from such entirely different sources, it was thought that all brought together would emphasise the importance of the subject with which I propose to deal. It is true the importance of volunteering is recognized; but only in a way, and that way principally what I may term a lip recognition. The fact that the State bears the cost of maintaining 34,000 volunteers is important—very important to the tax-payers is the fact that about 92 per cent are returned as efficient. We talk about these and other aspects, but do we, that is, the State and the public, act quite up to our profession of interest? Do we fully realise the vital importance of the whole thing? In spite of the gradual increase in numbers, many old volunteers cannot but have been forcibly struck, within the past few years, with the perceptible decline in enthusiasm among the civil population for soldiering—call it amateur soldiering if you like. Much thought has been devoted to this feature, often it has been discussed, but it is difficult to arrive at any definite conclusion as to the cause. Circumstances differ in different localities, but there must be some general cause underlying the falling off and the increasing indifference of non-volunteers towards volunteering in any form. Various

Simla, where hill men of enlisted classes frequently work during the hot weather—anything up to Rs. 1 *per diem*, it will be obvious that it is not high pay which attracts the would-be soldier.

To take now the subject of pension. Until recently, a pension of Rs. 4 *per mensem* could be obtained by a sepoy, after a total period of 15 years' service. Now, however, in order to earn a similar amount he is required to put in an extra six years, while the work he is expected to perform increases yearly. It will be found, on taking statistics, that only a small percentage of men enlisted qualify for this pension, and it may be doubted even whether 50 per cent of men *join* the colours with any idea of completing the requisite period of 21 years. Hence, the question of pension may also be dismissed as forming a general incentive to military service.

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- (4) Ambition.

(1) Young blood is easily fired with tales—more or less highly coloured—of the attractive side of regimental life, of new stations and countries to be seen, of the opportunities for distinction, and of the excitement of active service. Further, like his brother-villager in England Jack Sepoy rather "fancies" himself in uniform (before he is enlisted).

The one article of uniform which a sepoy very frequently wears when on leave, viz., a pagri of regimental pattern, has an extraordinary power of fascination for his simple caste fellows. A khaki or blue *safa*, tied after some particularly seductive regimental pattern is by no means an unimportant factor in influencing the number of recruits which a Regiment attracts. The neater the pattern, the greater the attraction. To give an example. The pagri which is somewhat loosely tied has to be kept in position by some more tightly fitting article underneath it. This article, in the case of a Muhammadan is a *kullah* (peaked cap); in the case of a Hindu either a skull cap or a small *poj* of red cloth several yards in length wound neatly round the head and displaying, when the pagri is tied on over it, from three to eight overlapping folds in the centre of the forehead. Now *celere paribus*, a Regiment adopting the *poj*—which is unquestionably the neater-looking of the two—draws far more recruits than one in which the skull cap is in vogue.

(2) Many families have, in an unbroken record of several generations, a wayside shed one or more members from military service, and need not say these form a very useful backbone to the Native Army. But it more commonly happens that most of us as to be very unconnected with heredity are responsible for the supply of some of our best material. A household, for instance, with only a limited amount of land and no other occupation (or in stock-raising classes are

farmers), and with (say) half-a-dozen able-bodied brothers, can barely support itself, unless two or three of its members earn their bread in outside pursuits, and these will generally choose military service in preference to anything else, as being likely to gratify their tastes and at the same time afford them a means of livelihood.

Again, long-standing family blood-feuds are, among the Afridis, responsible for bringing many a fine lad to the Colours, who would never have joined them had he not found his own country rather too hot to hold him for the time being.

(3) It is extraordinary to note how an agriculturist who has enlisted seems to step at once on to a higher social platform in the eyes of his countrymen; and the further removed his district is from railways, large towns, and civilisation generally, the more marked becomes the distinction made. I have frequently noted with astonishment, in remote hill districts, what *deference* is paid to a brother of the sword by his brethren of the spade. When he visits his home on furlough, his relatives treat him as an honoured guest; he is not expected—indeed hardly allowed—to take any part in the usual family routine of work; his opinion on any matter is listened to with respect. In fact, almost the only statement which his friends find hard to believe is his explanation of his inability to save more than the trifling sum which he has brought for the benefit of the family exchequer. It is a popular idea among his countrymen that to become a soldier is to amass wealth. The prevalence of this notion is, no doubt, partly due to the fairy tales which Recruiting Parties sometimes find it necessary to invent, in order to attract a sufficient number of youths of the proper type. There is no doubt that the explanation of this increase of social standing which a sepoy acquires—especially, be it said again, in remote regions where a white man is rarely, if ever, seen—lies in the fact that he has become a direct protégé of the *Sarkar*. Does he wish to make any representation regarding a case of “*zulm*” on the part of the Police towards his family, to apply for Government forest wood to build him a house, or for a license to carry a gun—his application is ensured attention, by the all-potent signature of his C. O. who forwards it on. Does he desire to prosecute or defend a case, he is sent on a month's leave, with a letter from his C. O. asking that the case may be definitely decided within that period. Should he even get into hot water with the Civil Power, the *Sarkar* (as represented ever by the “Colonel Sahib”) backs him up, if to do so is compatible with justice.

(4) Lastly, ambition. This, though by no means the least important, is not, perhaps, a very generally predisposing cause of enlistment. Ninety per cent of recruits enlisted are entirely illiterate, and the ambition to rise in their profession will, at best, only come after several years' service in the ranks, combined with a good deal of unpalatable instruction in the Regimental School. In fact, as already noticed, only a comparatively small percentage of men enlist with any idea of completing the full term of 21 years

service. More especially is this the case with the Afridi, who is of an extremely restless disposition and finds three or four years of uneventful encampment life unbroken by the excitement of active service, well nigh intolerable.

On the other hand there certainly are men who do enter the service with the deliberate aim and idea of some day attaining to the dignity of a Commission. Indeed, it would be difficult to explain on any other grounds, how the small wage of a private soldier can attract a well educated man, such as is to be found occasionally in the ranks, seeing that he could command a far better income as a clerk or in some independent vocation.

The raising of new Punjab Regiments during the last few years, together with the reconstitution of a number of Madras Regiments, in favour of the Pimpuchment, has seriously strained the resources of certain recruiting areas, and a Regiment more especially a 'Class' Regiment does not obtain its annual complement of recruits of good physique without considerable trouble. The liberal concession made to the Native ranks in the matter of leave and furlough are in favour of recruiting generally, but still the question resolves itself finally into one of supply and demand pure and simple. Had not several practically new sources been tapped, and the minimum standards of height been lowered in certain cases, the reconstitutions and additions mentioned above could not have been carried out in their entirety from simple lack of material.

It follows then, that a Regiment which has a good connection, and exists none but a good type of recruit (of whatever class), and which further, devotes little trouble to the selection and working of its Recruiting Parties, will soon in the end

II. RECRUITING PARTIES.

A great deal may be done in the way of enlistment by encouraging men proceeding on leave or furlough to bring back recruits with them. This method as far as it goes, is in many ways more satisfactory than the employment of regular Recruiting Parties.

For one thing a given man will probably only bring back such recruits as are related to or personally known to him, and consequently he can more justly be held responsible for their future good behaviour. Secondly *the cost* is less thereby, for the more a Regiment has to rely on its recruiting parties, so to say the more native is the effect of its working, and as one term in its economy.

If the Regiment is at one of its recruiting centres, a man will often volunteer to bring with him a few recruits when he returns, making the process of this bringing in of recruits on grounds, and of his having to go to places far from recruiting. But when the Regiment is at a station far from its recruiting centre, this procedure is impracticable. A Recruiting Party, therefore, has to be assigned to the duty of travelling up and down the country, and the desire of bringing back recruits is more or less entirely lost sight of.

to the Adjutant, who—if there are any vacancies for men of that particular class—will fill up and give him a printed Memorandum for the Recruiting Staff Officer concerned. The printed form might be somewhat of the following type :—

No. — Station — Date — 190 .
 FROM ————— To —
 COMMANDING THE R. S. O.
 For —————

MEMORANDUM.

I request that you will be good enough to examine recruits up to — in number brought by the marginally named ^{man} _{men} of my Regiment on ^{his} _{their} return from ^{leave} _{furlough} sending me their Nominal Rolls.

They should fulfil the following conditions, *viz.* :—

- | | |
|---------------------|---|
| SIKHS | ... To be Jats of Manja or Doaba Districts, minimum height 5'-7½", chest 33", age 17—22 years. |
| DOGRAS | ... To be Rajputs of Kangra District, minimum height 5'-5½", chest 32", age 16—21 years. |
| AFRIDIS | ... To be Malikdin, Kamar or Kambar Khels of Tirah, minimum height 5'-5", chest 33", age 17—22 years. |
| PUNJABI MUHAMMADANS | ... To be Rajputs, Ghakkars, or Awans, of Jhelum or Rawalpindi Districts, minimum height 5'-8", chest 34", age 17—22 years. |

Discharged sepoy should not be brought for enlistment.

LIEUT.-COLONEL,

Commanding —————

A man should be allowed as many days' extra leave as will cover the extra time taken in proceeding to the R. S. O.'s Headquarters and getting the recruits examined, previous to his return to the Regiment. If the recruit is not passed, the "Nominal Roll" sent by the R. S. O. will be sufficient guarantee that the sepoy did actually present himself at the Recruiting Office.

The Adjutant should keep a note-book in his office, in which he notes the number of recruits whom leave and furlough men have been empowered to bring; otherwise, he may find, when too late, that the Regiment, or some particular class, is over the authorised strength. The entries would be very simply made, as :

No. 9999 *S.p. Sundar Singh, B. Coy., 2 recruits, 3 days' extra leave.*

Let us now consider the usual procedure adopted by a Recruiting Party sent out. It consists of perhaps 15 men—3 N.C. O's and 12 saps. These, after an absence of possibly 1½ months, return having enlisted their required number of 30 recruits, while as many or more have been rejected by the R.S.O. The recruiters state that, owing to the cutting of crops, competition with Recruiting Parties of other Regiments, etc., they have not been able to make up their full tally sooner. Unless a British or Native Officer, having some knowledge of the recruiting area concerned, and of the conditions obtaining there, accompanied the Recruiting Party, there is absolutely no means of checking the truth of these statements. The probability is, however, that not a man of the Recruiting Party has walked more than 20 miles from his own doorstep, and that the men have simply enjoyed a welcome period of extra leave at Government expense, while they will certainly have made a fairly good haul out of the annas 4½ *per diem* pay allowed to each recruit from the day his name is entered in the recruiter's note book. A recruiter brings a recruit before the R.S.O., informing the latter that the recruit was enlisted by himself (say) 20 days previously. The recruit is perhaps rejected, when the sum of Rs. 5.10.0 due to him will later on, be paid over to the recruiter, who is supposed to have expended this maintenance allowance in feeding his charge. The boy himself does not, in any case, understand that he is entitled to any pay, of course, but the facts of the case probably are that he has been living at his own home, and at his own expense, for 15 or 16 days, and that his food for the few remaining days has not cost the sap more than 2½ annas or so *per diem*. If the recruit is finally approved and sent off to join his Corps, the man who enlisted him still gets the amount of pay in question, which is always drawn through the Regiment. Another trick, of which an old hand is very fond, is that of bringing up several recruits whom he *knows* to be under no engagement or otherwise unfit, so as to get his usual period of flesh from each on rejection. If a recruit brought up for inspection is payably unfit, the R.S.O. will sometimes disallow the whole of what the recruiter has spent (or pretends to have spent), but he is naturally reluctant to do this too freely, consequently the recruiter, even if caught out once in a way, finds the game much too paying to amend his ways.

Let us see how these recruiting parties can best be remodelled. In the first place, no man should be sent as one of a Recruiting Party who cannot certify to others that he knows personally of two or more boys who are likely to fulfil the necessary conditions as to height and chest measurement, etc., and are willing to enlist. When a Recruiting Party is to be sent out, recruits' interviews can be held for the foregoing conditions being satisfied. A sufficient number of names will probably be forthcoming to give a certain field of

selection. If the party is to be a large one, and a number of recruits are wanted, a British Officer (who would, however, rarely be available), or a Native Officer, should be sent in charge. In any case let each man in the Recruiting Party clearly understand that a period of (say) three weeks is not to be exceeded, and that the whole party must return by the specified date. The period will be long enough to give the recruiters some days to spend at their homes, and to produce extra recruits for replacing any rejected by the R. S. O.

Secondly, there should be certain fixed rules regarding the disposal of the pay due to recruits (enlisted or rejected). These rules should be carefully drawn up in consultation with Native Officers of the classes concerned, and incorporated in the Regimental Standing Orders. The points to be decided are—

(1) Taking a fair average, for how many days will a recruit necessarily be away from his village and under the personal charge of the recruiter?

(2) What is a fair allowance for feeding one recruit *per diem*?

This last question can either be specially decided (in consultation with Native Officers) each time a Recruiting Party is sent out, or a sum can be permanently fixed, which will be sufficient in a bad year when food is expensive, and will allow the recruiter some margin of profit in a good year.

The sum fixed must, of course, in no case exceed annas $4\frac{1}{2}$ *per diem*.

The above points having been decided, the amount which a recruiter is entitled to "charge" for each of his recruits can be easily calculated, the R. S. O. being requested to have paid before him by the recruiter to each rejected recruit, the balance (if any) of the annas $4\frac{1}{2}$ *per diem* up to the fixed number of days, and the whole of the pay for any period over and above this; the balance, in the case of an approved recruit, will, of course, be drawn and paid to the latter by his Regiment.

It must be remembered that one fixed rate cannot be laid down for all classes indiscriminately. The ruling will depend upon—

(1) The extent of the particular recruiting area concerned.

(2) The average distance to be traversed on foot, before reaching the railway.

(3) The number of recruits a single man is usually expected to bring. (The larger the number, the longer will the recruits take in collecting, and consequently the greater the average allowance of time which should be made to the recruiter for keeping them in his personal charge.)

(4) The delay usually caused at the recruiting centre.

An Afridi from Tirah, for instance, will cost more than a Dogra from Kangra, and the latter, again, more than a plainsman.

Let the rules be sufficiently liberal. If the recruiter does make a little profit, no harm is done, but the conditions should be such that he is never actually out of pocket. The object is solely to

prevent the recruiter from making a large profit at the recruit's expense, and from employing methods which enable him to "do" the State out of considerable sums (paid on account of unfit recruits deliberately produced); he already has the solid advantages of visiting his home at Government expense, and of drawing special "batta" during the period he is on recruiting duty.

The above system will give the R. S. O. a certain amount of trouble as regards the calculation of amounts due, but he will probably make no objection, in fact will, no doubt, be pleased that the recruits' interests are so well safe-guarded. A printed summary of the rules for Recruiting Parties should always be sent him, at the same time that the usual intimation of the despatch of the party is made, together with a polite request that he will pay rejected recruits the proper amounts due to them—the money being, of course, taken out of the advances given to the members of the Recruiting Party. The system will, if carefully worked out, be found to produce entirely satisfactory results, and the keenness of men to be sent on recruiting duty will be sufficient proof that their lawful interests in no way suffer.

POINTS TO BE OBSERVED, AS FAR AS POSSIBLE, IN CHOOSING MEN FOR RECRUITING PARTIES.

The men selected should not only be good soldiers, but should be smart in dress, and of good physique and appearance; they should, in fact, be solid advertisements of the health and strength gained under a military regime.

A judicious sprinkling of long and short service men will be found to answer well. A smart young sepoy, with only a couple of years' service to his credit, keen on his work and anxious to get on, will do his very best to produce good men, for his own sake. The men must be given a sufficiently large advance of money to enable them to pay off rejected recruits, and feed their charges, etc., and will, of course, render an account on the basis of the rules fixed on their return.

The rules as to payment of recruits, etc. (enumerated above), should be read and carefully explained to each member of the party.

Men who bring particularly fine recruits should be rewarded, by being selected, on the next occasion, for the same duty, while a man who consistently brings weakly and under-sized boys for enlistment, should be permanently barred from recruiting duty.

Each man should be given a length of measuring tape and a measuring stick. The latter can be turned out very cheaply by the regimental carpenter.

The men should be reminded of the necessity for enhancing verbal persuasion by the wearing of khaki trousers and a regimental pattern pigtail, and the nature of measurements required in a recruit should be impressed upon them.

The presence of a competent British Officer, or, with a Recruiting Party, will be of immense advantage, not only in stimulating his

own men, working under his eye, to do their best, but also—especially if he be personally acquainted with the district—indirectly attracting recruits. Unfortunately, a British Officer can seldom be spared for this duty. An officer, however, who is keen enough to spend his annual two months' privilege leave, now and again, in working through a recruiting district "on his own," will gain a large amount of useful knowledge at first hand, and at the same time do his Regiment a decidedly good turn in the recruiting line. If there are no immediate vacancies in his Regiment, he can easily arrange to keep a list of likely youths met with, and these can be sent for as occasion requires. Provided they have not to wait very long, they will probably be proof against the wiles of any Recruiting Parties who may knock up against them in the meanwhile.

It is, of course, the business of a Medical Officer to determine the medical fitness, or otherwise, of a recruit; but our British Officer on tour will find it an advantage to be able to apply the following simple tests to a would-be recruit, before entering him up as provisionally eligible:—

- (1) Drawing down the eyelash, note the colour of the eye below the eyeball. If, instead of being red, it is almost white, or colourless, the subject is anæmic, and should ordinarily be rejected.
- (2) A discoloration of the skin of both cheeks, about midway between ear and nose, implies that the man has been suffering continuously from malarial fever.
- (3) Rub the man's lips gently against his teeth; if the gums bleed, he is suffering from scurvy.
- (4) When both heels and both toes are brought together, it can be seen whether the subject is knock-kneed; if so he is unfit.
- (5) Make the man stand with his legs fairly wide apart, and, toes pointing straight to the front; then note whether the instep is arched or not; if flat-footed, reject.
- (6) Note whether there are any obvious varicose veins.
- (7) Disjointed fingers or toes, and broken teeth, should also be looked for.
- (8) Curvature of the spine is shown by the unequal height of the two shoulders, when a man is standing upright. Care should, however, be taken not to conclude hastily that he is suffering from this, as he may be merely standing awkwardly.

A recruit need not *necessarily* be rejected on account of anæmia, scurvy, or slight curvature of the spine. The former may have been caused by constant working (or overworking) in unhealthy surroundings, and the scurvy by bad food, and either will probably quickly disappear under more favourable circumstances. Many men will be found to have slight curvature of the spine, due generally to continual carrying of loads, and this in itself should not be sufficient to disqualify an otherwise good recruit.

There are, perhaps, two special cases in which the minimum standard of height or chest measurement might with advantage be relaxed:-

- (1) In the case of a man in the Regiment desiring to enlist his own brother. Provided the latter is otherwise fit and strong the fact of his brother being a good soldier in the Regiment might well be allowed to decide the balance in his favour.
- (2) Owing to the competition between Regiments, for good recruits, on account of the scarcity of the supply, a British or Native Officer might always be allowed *personally* to decide on bringing up before the R.S.O. a young growing lad, fit for regimental work, and giving promise of developing another inch or two, even though he should be under the minimum standard at the time. There is no doubt that many a good recruit is lost to a Regiment which lays down a hard and fast rule in this respect, and he is quickly snapped up by another Regiment not so particular, or more far-sighted.

THE CONDITION OF VOLUNTARY MILITARY SERVICE IN INDIA.

BY CAPTAIN W. HAWKINS, 1ST PUNJAB VOLUNTEER RIFLE CORPS.

"I hold that in India every Englishman by birth or descent owes it as his duty to his country to become an efficient volunteer."—(LORD KITCHENER at Calcutta, 1903).

"On the occasion of Lord Minto's arrival last week, *for some reason or other*, the adults of the Battalion were unable to furnish a guard-of-honour at Government House."—(*Englishman*, November 1905).

"The other view of the volunteers, and the one which we believe to be the only sound one, is that they are capable of performing three most important functions in the national life. The first of these is to act as a national school of arms in which, without compulsion and without incurring the dangers of militarism, our citizens may learn that without which no man is fully a man, namely, how to defend his home and his country in case they are threatened by foreign invasion."—(*Spectator*, September 25th, 1905).

"It is only from men who feel that they can be of some service that volunteers can be expected, even in the most patriotic nation."—(*"Times"* History of the Boer War, Volume III).

Perhaps some excuse will be expected for opening an article on volunteering in India with four extracts, such as those produced above. Well, one excuse is that each in its way touches a particular phase of volunteering; and, culled as they are from such entirely different sources, it was thought that all brought together would emphasise the importance of the subject with which I propose to deal. It is true the importances of volunteering *is* recognized; but only in a way, and that way principally what I may term a lip recognition. The fact that the State bears the cost of maintaining 34,000 volunteers is important—very important to the tax-payers is the fact that about 92 per cent are returned as efficient. We *talk* about these and other aspects, but do we, that is, the State and the public, act quite up to our profession of interest? Do we fully realise the vital importance of the whole thing? In spite of the gradual increase in numbers, many old volunteers cannot but have been forcibly struck, within the past few years, with the perceptible decline in enthusiasm among the civil population for soldiering—call it amateur soldiering if you like. Much thought has been devoted to this feature, often it has been discussed, but it is difficult to arrive at any definite conclusion as to the cause. Circumstances differ in different localities, but there must be some general cause underlying the falling off and the increasing indifference of non-volunteers towards volunteering in any form. Various

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reasons have been assigned, the favourite, and I may say the most insidious one (and the most misleading) being that "in these days life in India, whether at work or at play, is a great deal more strenuous than it used to be." Practically this amounts to the plea of want of time—a miserably inadequate one under the present easy conditions of service. No, we must go deeper into the causes and further away from any such shallow excuses.

I assign the present lack of enthusiasm, in a great measure, to the following causes, *viz.* :—

- (a) the idea (rightly or wrongly) prevalent that Government does not take the volunteer *seriously enough* ;
- (b) the absence of any authoritative declaration as to the *exact place of volunteers in the military organisation of the country* ;
- (c) the almost universal abstention of the higher grades of the public service from anything connected with volunteering ; and
- (d) the present low standard of efficiency demanded of volunteers—a cause closely allied to (b).

At first sight the first cause may appear somewhat startling. To controvert it one has only to refer to the comparatively recent departure of appointing an Inspector-General of Volunteers, to the special grants for exercise, special grants for musketry prizes, grant to officers towards providing equipment, grants to schools for cadets, the appointment of honorary aides-de-camp, the occasional bestowal of honorary titles and distinctions, and so on. Then there was the Volunteer Committee of 1892, which unhappily, however, gave us something big which the members did not want and withal much that they unanimously thought should be conceded. All this is excellent and a vast improvement on a state of things that existed twenty years ago. How then account for the feeling, nay the fact, that indifference exists notwithstanding? Why this persistent abstention from the ranks of a community which could help so enormously to make the force a really valuable one? Why the constantly recurring difficulty of finding suitable men to accept commissions? Why the increasing difficulty experienced by officers to induce enthusiasm and to exact stricter discipline? Why the prevailing sometimes blatant ignorance on the part of the non-volunteer section of the European community with respect to volunteering generally? Such circumstances indicate that something is yet wanting. Let us endeavour to see what it is.

The State must I fear take one or two more steps forward to make the Volunteer Force more of a living thing than it is. If it is really of importance to the State that the civil population should be armed and trained in the business of self-defence it is equally of importance that adequate measures to that end be taken before any crisis actually arises. The awakening of spontaneous interest under such an influence has hitherto been deemed sufficient to satisfy the public that Government is in earnest in

making volunteering an integral part of the defence of the Empire. It is this spasmodic interest which has been of the greatest disservice to the proper organisation of the Volunteer Force. We have had repeated over and over again such statements as that the Governor-General in Council is desirous of "promoting the volunteer movement in India to the fullest extent." We have had frequent exhortations to Local Governments to encourage volunteering to the same extent, and to induce their employés of all grades to bear arms. I would be the last to contend that this was not all absolutely meant, and that the declaration and exhortations were not earnestly made; but it is the want of sustained effort, persistent endeavour and tangible interest which so shortly afterwards becomes apparent. Things are allowed to drift to a dangerous degree, indifference creeps in, and members of the Force—the more earnest members those who care most—get to feel that all is unreality, that no one really and truly minds.

Many years ago the existence of the volunteers depended, as was correctly remarked by a distinguished soldier, a true and consistent friend of the Force, on the fact that we stood in an alien country, surrounded by those to whom we were aliens. He admitted that the rule of the people who found themselves in such a position was of a kind to exact the gratitude of the subject race. "Toleration in religion is universally practised," he continued, "person and property are more secure in this country than in almost any other in the world; cruel customs have been suppressed; and lands which have been the battlefields of invading armies and the human hunting grounds of oppressors are now flourishing in the happiness of peace and quiet." Most aptly put, but it did not blind the writer to the fact, which indeed he was then labouring to emphasise, that all this can alone be absolutely ensured by the British Army in India *and by the organised strength of the European community*. Were not these sentiments in the mind of Lord Kitchener when he addressed the Calcutta Volunteers in 1903 in the words with which I have opened this paper?

Far be it from me to conclude from the remarks just quoted that the writer had in view coming *internal* trouble only. It cannot be sufficiently impressed upon the community that they are not called upon to arm and train for this purpose only. External trouble will as likely as not necessitate the first call on volunteers. Recent history teaches us this, regarding which more anon. Allowing, then, that it is a matter of the utmost importance to the State that as many of the European population as can be induced to do so should, in the time of profound peace, submit to military training, have all pains been taken to make this clear, not only to the paid servants of Government, but to the very considerable and yearly increasing non-official community? Many of the best friends of the State and its most loyal servants are compelled to think it has not—not from deliberate neglect, but more from an unwillingness to exact from its servants the duty which the Commander-in Chief referred to at Calcutta and

diffidence to go out of its way to make the non-official community recognise the duty also. Money is, I think, spent freely enough under existing conditions, but whether Government gets that money's worth is quite another matter. To get really a good return on money at present spent the State must be prepared to invest further moderate, very moderate, sums. A thoughtful writer dealing with the money aspect of the case some six years ago estimated the grant for volunteering was sufficient to pay the annual cost of four battalions of British or ten battalions of Native Infantry and to leave in either case a little over for a couple of batteries of mountain artillery. What he meant to infer is not quite clear, although from the tenor of the article in which the remark occurs it would seem that he was inclined to the opinion that Government would be wise to invest its twenty lakhs in four or ten battalions of regulars. I do not propose to enter into a discussion on this point, but will content myself with saying that if by spending twenty lakhs Government can ensure even 16,000 *good and reliable volunteers* (and that a very modest proportion of the 34,000 enrolled men) it is not waste; it is a good investment. But in addition to *spending*, the men on whom this money is spent must be made *to feel* that a value is placed upon them. The soldier, British and Native, knows exactly what value Government places on him, and although it would be ridiculous for the volunteer to expect exactly the same consideration, yet at present he *feels* many aver that they *know* that he is not of much consideration.

This brings us to the next point. Some authoritative declaration as to the exact *raison d'être* of the present day volunteer and as to his exact place in the military organisation of the country, should be made without delay. "Defence not Defence" was all very well but a century ago. The Legislature took a big step forward in the right direction ten years ago when it enacted that a volunteer shall be liable for service within his civil district or within the limits of the territory comprised of the districts where sections of the Corps are enrolled (this would be a very extended area for the 1st Punjab Volunteer Rifle Corps, for instance, compared with the old territorial limit). Events in other portions of the Empire have demonstrated in a remarkable manner that external as well as internal wars have become a feature of the voluntary service. If there is any situation in the world more similar to that of Europe in India it is that which exists in North Africa. There is a question of degree, of course. Up to 1902 the Colony was more or less isolated from the north and north-west. It has since then become a frontier. Kert's frontier, western border and the whole of the Sahara frontier from Tripoli to the centre of the empire. Before 1902 most frontiers in the Empire and it was dependent on a policy of "Forward France" but what an intimate and profound effect it had on the Empire was seen even before the outbreak of 1914. On 28 September 1914 the Emperor of Germany said that it would not be before the expiration of several months that the General Commanding the North African Force would be able to

dismiss them to their ordinary avocations. It was only when General Buller had quitted Natal territory and had got as far into the Transvaal as Standerton that he was in a position to tell General Darnell that the Commander-in-Chief could dispense * with the services of the Natal Volunteers; and even then the dismissal was coupled with the condition that 300 mounted men should be re-enrolled to replace them to undertake the defence of the Dundee section of the eastern frontier, a task which was easily accomplished. Then, again, did any of the volunteers in India ever dream, on learning of the declaration of war in October 1890, that 250 of their number would sail for Africa in the following February and leave behind them there, within another couple of months, seven of their number killed in action, not to mention two who died from sickness and a number wounded? Even the stay-at-home British volunteer soon felt that the time had come to prove to the State that he was prepared to take up a burden for which he was never up to that period intended.

Seventy thousand members of home Volunteer Corps offered their services for South Africa, and although the War Office was only able to accept the services of 19,856, † yet the public was made conscious of the fact, for the first time, that here was a reserve until now undreamed of. Circumstances then are becoming too strong for the old motto "Defence not Defiance." Ours is a world in which in the most unexpected quarters "history repeats itself," and it seems incredible that the experience of the past eight years will be forgotten.

To go back to the question, what is and what should be the *raison d'être* of the Volunteer Force of India? Old volunteers will remember being told a dozen reasons for their existence. One distinguished officer has told us that "the sooner the fact is recognised that the place of the infantry volunteer is behind a wall in his own district, and that he has neither the physique, ‡ the discipline nor the mobility of a soldier of the line, the better"; another that "he would be required to keep order in the district in which he resides, to overawe disaffection, to defend houses and hold positions and to keep open communications in troublous times." The defence of posts and outpost duty (two such totally different tasks) are advocated by another as the chief objects of our training. A colonel who knows something of his men has stated that "nothing contributed more to the efficiency and popularity of Volunteer Corps than the association of volunteers, as much as practicable, with the regulars at field-days" and that no alteration in the drill practised should be allowed which would interfere with such association." An officer who for many years administered the affairs of the Army in India, in advocating the establishment of a European and Eurasian militia, has remarked that

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"fortified posts (where women and children, the aged and infirm could be safely housed) would be trebly advantageous if we knew that their defence might be entrusted to a soldier and every British soldier set free for service in the field." In addition he thought that in times of imminent danger the local forces could garrison fortresses at the capitals, keep open lines of communication and use the powers of troops in garrison. An able and popular volunteer leader has often impressed upon his men that their chief business would be to shepherd their wives and families into places of safety and there remain as a protection. One inspecting general has told volunteers that when troops are called away, the farmer would act as a kind of police (military no doubt), another that they should practise the intercepting and capturing of convoys, and watch main lines of communications. A third devotes his entire attention to field firing up the range, a fourth to skirmishing over open or broken country, praising or blaming chiefly the delay or inadequately displayed intelligent cover, making rushes, and so forth. A fifth strongly urges the Commandant to supply volunteers and non-commissioned officers—and even the men—with copies of *Combined Training*. A sixth and more enterprising general sends into camp overnight an abstruse problem involving the landing of a bridge of boats and a railway bridge in the early hours of dawn against regular troops. He allows the volunteers to take part with the troops of an advent garrison in the last of a four days' action, takes infinite pains to explain beforehand at what stage the men might be used, what part the volunteers are expected to play, and at the conclusion devotes half an hour or more to critiquing the results. It is work of this last description, it must be admitted, which the men really like, notwithstanding that it means leaving camp at 4 A.M. and returning at 4 P.M., and perhaps after tiring out a day that is a top-heavy affair. It is a general of this type, when the men approach.

But when afterwards they come to reflect on it all, to review their seasons' work, they naturally wonder what other use they are being trained for, when of these conflicting views is right. Non-volunteers a soldier asks whether it is worth while to devote so many hours a week to drill and musketry in order to become efficient defenders behind a strong wall of fortifications. They are not aware of the existence of any distinct principle, apart of any unimpeachable position as regards them. It is surprising that—as another volunteer says—there is no training for the men on the part of volunteers as a whole, no serious work, no serious training from an advanced training point of view, no serious training, and as absolutely necessary as a part of the training of the British soldier, as an act of discipline. When asked to contribute to the volunteer way with the soldier, who is asked to take no only assured Mr. H. that the soldier is not a soldier, but a soldier's part for real functions, and to be a soldier's soldier. There is a great deal of reason, many fair points of procedure, often with the remark: "Oh, time enough when there is any real necessity," thinking that

the amount of drill and musketry now required from the force will soon be picked up. I often wish that some of these had heard a volunteer Adjutant, who had just completed five years with a corps in North India, on this subject, when the point came up at an Officer's farewell dinner. "Well, gentlemen," he said, referring to the type of man indicated, "all I can say is that I pity you from the bottom of my heart when you have the training of such men in a time of emergency." I do not think the class I refer to here would be nearly so numerous if it was felt that something more than nine drills a year and a couple of mornings of musketry (sometimes only a single morning) was needed to make a "trained" volunteer; if he could be convinced that the State recognised the necessity of assigning to the force a definite place, a definite ideal, and so acted as to convince all classes that the time had come to organise the force, improve its training and make service so attractive as to ensure that a very large proportion of the 34,000 civilians shall be a real valuable reserve of strength.

It is not necessary to deal at much length with the abstention—almost universal—of the higher grades of the public services from anything connected with volunteering. Not a few causes have, from time to time, been assigned, not a few excuses have been made; the importance of securing an accession of strength from this source has even been questioned. Frequent transfers is one cause assigned, the old system of election for commissioned rank was another, "rubbing shoulders" another, and want of leisure. I believe, however, that most of the class would be captured if its members could be convinced that a real value is placed on voluntary service.

How, then, is Government to show in no uncertain manner that voluntary service is appreciated, and that in proof of such appreciation something more may now be required of the volunteer. It could be done, in part at least, in this way. The minimum number of drills must be raised considerably above nine. No corps can hope to be as efficient as inspecting officers now expect them to be if each man confined himself to nine drills a year. It is the men who attend many more than nine who stiffen the company, and who enable the officers to exercise fairly large numbers in company drill, skirmishing, and the like; and all should be encouraged to work beyond the minimum.* It does not seem at all good policy to pay a volunteer who puts in nine drills exactly the same capitation grant as is paid for the man who attends his thirty. A simple sliding scale in favour of the more enthusiastic volunteer would be found to pay. To quote from Mr. Arnold-Forster's speech to the 1st Volunteer Battalion of the North Stafford Regiment, at Henley, late last year, "the change should be based on the principle which I hold is the only true principle of the volunteer or any other force, namely, *more to the man who served you well and less to him who served you ill.*"

* In the drill season of 1905-06, sixteen of my men put in from 20 to 30 drills and sixteen from 15 to 19, not an unusual experience.

At least three times a year the volunteers should have the opportunity of drilling with whatever regular troops may be available, and the annual inspection should invariably take place in conjunction with such troops, even if only a company. Native or European, happens to be in the neighbourhood. At least twice a year an officer of or above field rank should be deputed from the nearest cantonment to attend unexpectedly any ordinary parade and either take the men in hand himself or criticise the work after drill. Another should be deputed to see twice a year as many men as possible going through their musketry course. The men would soon get to feel then that some value was being placed on their work, that the eye of the General Officer Commanding the brigade or division was *always* on them; new interest would thus be introduced. All this would have the additional advantage too of making a large number of military officers better acquainted with the force.

There is, perhaps, no fault to be found with the present musketry course, but in connection with it three drills at least in the season should be devoted to field firing, each exercise preceded by careful but brief instruction relating to it. I would also strongly advocate grants-in-aid to company rifle clubs, on condition that their rules be made subject to the approval of the General commanding the division or brigade, who would as a rule, probably always insist upon practical shooting.

Training generally should not be of too limited a nature; the officers and men should be encouraged to go *as far as it is possible to take them*; in fact no standard should be considered too high. We can never expect to be equal to the regular soldier, but men who put in from twenty to twenty-five consecutive years of drill on an average of twenty a year, in addition to musketry courses, company rifle club shooting and corps prize meeting shoots cannot after all be very far behind.

Another way in which the State may show its appreciation of the volunteers' service is by the grant of some minor, yet useful, concession. Personally I do not like the term "concession to volunteers," but I am gradually being forced round to the conviction that steps in this direction must sooner or later be taken if the volunteer movement is not to languish, and if better work is to be obtained. But the cardinal point of such concessions should be that they are an indication of approval and recognition of *merit*, *that* *voluntary service*. The annual drill man would as a rule have small chance of thus obtaining special recognition. The unanimity of opinion expressed by governors of provinces downwards in favour of a remission of income tax is surprising, but it is such an unpredictable measure under existing circumstances in India that the idea must be abandoned. Apart from a better consideration, apart from the fact that it secures too much of a discount on tax payment for voluntary service, we cannot get away from the other fact that first and foremost we are members of a civil community and must as such bear a proportion of the tax levied primarily at our expense.

as a provision for defensive purposes. Pensionary and leave advantages cannot be made universal, as a large element of the force is non-official. But I see no objection to concessions in railway travelling and of passages in troopships. They would cost the State practically nothing. As regards cheap fares for railway travelling, theatrical companies, cricket, polo, hockey and football teams and school children and railway employ  s already enjoy the privilege. Surely it is not asking too much to extend it to the best volunteers of the force. Many non-combatant members of the Army obtain passages in troopships, and although a large number of volunteers could not avail themselves of this means of getting to England, yet a fair proportion would always be willing to do so, and it would be something to know that this means of getting home is always open if it can be earned. What also could be a more harmless privilege than to allow officers to pass language tests on the same conditions and with the same rewards as officers of the regular service? Indeed, I would even extend this privilege to sergeants.

A word in conclusion about cadets. There is no more encouraging feature in volunteering than the greater attention which is now paid to the training of cadets in India. It is no small thing to have nearly 5,000 boys all over India undergoing instruction in the use of arms. The cadets thus constitute a most valuable asset to the State, and I would make it still more worth while to school managers to encourage their boys to qualify as little soldiers. The eight-anna grant-in-aid is certainly an inducement, but I would double it for extra efficiency in physical drill. The Inspector-General does not like to see small boys in the ranks, but it is the small boy who rapidly develops under military exercise, and if Natal insists upon every lad over 12 years of age being a cadet, we should have no hesitation in following suit in India. I am not sure that we fully tap this source even yet. On the 31st March 1905 there were 16,667 boys in schools in India. Allowing that large proportion of this figure represents children under the age of 12 years, it seems that there should be a surplus of over 5,000 who are fit for military training.

I feel I have only touched the fringe of this vitally important question of voluntary service. My excuse for endeavouring to arouse interest in it lies in the fact that I have given twenty-five years of such service to the State with pleasure, passing through every grade from recruit to company commander. I have witnessed years of enthusiasm, I have passed through drill seasons when indifference has been the predominant feature. Knowing my comrades as I do intimately, I unhesitatingly say that the majority of material which could be most usefully moulded is really excellent. And, finally, I feel that the time has arrived for measures which may tend to arouse enthusiasm, swell our ranks, and make the Volunteer Force at least twice as efficient as it is now and stronger by not a few thousand men.

NOTES FOR 'Q' CANDIDATES

BY MAJOR G. F. MACMUNN, D. A. A. G., DERAJAT BRIGADE.

The following notes may be of use to candidates working or "Q" examination.—

After being the victim as a "Q" candidate and attending numerous "Q" manoeuvres, there are several points which one sees come to the fore every time. Tactics, especially the minor tactics that forces, the size usually taking part in "Q" manoeuvres, can indulge in, are governed by a few salient points. These salient points or rather general rules should be easily mastered, and once this has been done, "Q" problems, and what is far more important, though only one in a dozen will recognise it, minor problems in the field present no difficulty.

It is no uncommon thing to hear a "Q" candidate say "Oh, but I should not have done that, if it had not been an exam." Such a remark is enough to make the Recording Angel weep salt tears! Examinations exist, not as a fence that officers must clear before promotion, but to force those who wont read to study their profession. An officer who is up in his regimental work and the regulations connected therewith, who has devoted an evening a week to study his profession, need never fear any promotion examination.

If a man would pass his "Q," he has only to try and forget his board and himself, and to busy himself with the problem before him, to try and steep himself in the General and Special Idea. To take action he believes to be unsound, because he thinks the Board hypercritical and fantastic, is but to meet disaster halfway.

Ancient Boards, it should be remembered that they are benevolently inclined, and unless exasperated by arrogance, or "*quacking*" on the part of the candidate, prepared to stretch several points in favour of the candidate, if he only works in a quiet businesslike way. As regards the Board itself, some of its members quite recently have been through the same test, and if, as must naturally be the case, they are competent men, they have but two objects, first, to see that you know enough to be trusted with the lives of that number of officers and men which the fortune of war might place under the command of an officer of your rank; secondly, to assure themselves that you are in a fair way to be able to train officers under you, to the right knowledge of field tactics.

The following "good advice" is tendered in all humility to those unfortunates for whom the "Q" Board grimly wait:—

- (1) Do not explain to the Board that you have not seen troops for ages and know very little about them; it wont help you. (This was recently done by an officer.)

reasons have been assigned, the favourite, and I may say the most insidious one (and the most misleading) being that "in these days life in India, whether at work or at play, is a great deal more strenuous than it used to be." Practically this amounts to the plea of want of time, a miserably inadequate one under the present easy conditions of service. No, we must go deeper into the causes and further away from any such shallow excuses.

I assign the present lack of enthusiasm, in a great measure, to the following causes, *viz.* :—

- (a) the idea (rightly or wrongly) prevalent that Government does not take the volunteer *seriously enough* ;
- (b) the absence of any authoritative declaration as to the *exact place of volunteers in the military organisation of the country* ;
- (c) the almost universal abstention of the higher grades of the public service from anything connected with volunteering ; and
- (d) the present low standard of efficiency demanded of volunteers, a cause closely allied to (b).

At first sight the first cause may appear somewhat startling. To controvert it one has only to refer to the comparatively recent departure of appointing an Inspector-General of Volunteers ; to the special grants for camps of exercise ; special grants for musketry prizes ; grant to officers towards providing equipment ; grants to schools for cadets ; the appointment of honorary aides-de-camp ; the occasional bestowal of honorary titles and distinctions, and so on. Then there was the Volunteer Committee of 1892, which unhappily, however, gave us something big which the members did not want and withheld much that they unanimously thought should be conceded. All this is excellent and a vast improvement on a state of things that existed twenty years ago. How then account for the feeling, nay, the fact, that indifference exists notwithstanding ? Why this persistent abstention from the ranks of a community which could help so enormously to make the force a really valuable one ? Why the constantly recurring difficulty of inducing suitable men to accept commissions ? Why the increasing difficulty experienced by officers to infuse enthusiasm and to exact stricter discipline ? Why the prevailing, sometimes ludicrous, ignorance on the part of the non-volunteer section of the European community with respect to volunteering generally ? Such circumstances indicate that something is yet wanting. Let us endeavour to see what it is.

The State must, I fear, take one or two more steps forward to make the Volunteer Force more of a living thing than it is. If it is really of importance to the State that the civil population should be armed and trained in the business of self-defence, it is equally of importance that adequate measures to that end be taken before any crisis actually arises. The awakening of spasmodic interest, under occasional official pressure, has hitherto been deemed sufficient to satisfy the public that Government is in earnest in

making volunteering an integral part of the defence of the Empire. It is this spasmodic interest which has been of the greatest disservice to the proper organisation of the Volunteer Force. We have had repeated over and over again such statements as that the Governor-General in Council is desirous of "promoting the volunteer movement in India to the fullest extent." We have had frequent exhortations to Local Governments to encourage volunteering to the same extent, and to induce their employés of all grades to bear arms. I would be the last to contend that this was not all absolutely meant, and that the declaration and exhortations were not earnestly made; but it is the want of sustained effort, persistent endeavour and tangible interest which so shortly afterwards becomes apparent. Things are allowed to drift to a dangerous degree, indifference creeps in, and members of the Force—the more earnest members those who care most—get to feel that all is unreality, that no one really and truly minds.

Many years ago the existence of the volunteers depended, as was correctly remarked by a distinguished soldier, a true and consistent friend of the Force, on the fact that we stood in an alien country, surrounded by those to whom we were aliens. He admitted that the rule of the people who found themselves in such a position was of a kind to exact the gratitude of the subject race. "Toleration in religion is universally practised," he continued, "person and property are more secure in this country than in almost any other in the world; cruel customs have been suppressed; and lands which have been the battlefields of invading armies and the human hunting grounds of oppressors are now flourishing in the happiness of peace and quiet." Most aptly put, but it did not blind the writer to the fact, which indeed he was then labouring to emphasise, that all this can alone be absolutely ensured by the British Army in India *and by the organised strength of the European community*. Were not these sentiments in the mind of Lord Kitchener when he addressed the Calcutta Volunteers in 1903 in the words with which I have opened this paper?

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This brings us to the next point. Some authoritative declaration as to the exact *raison d'être* of the present day volunteer, and as to his exact place in the military organisation of the country, should be made without delay. "Defence not Defiance" was all very well half a century ago. The Legislature took a big step forward in the right direction ten years ago when it enacted that a volunteer shall be liable for service within his civil district or within the limits of the territory comprised of the districts where sections of the Corps are enrolled (this would be a very extended area for the 1st Punjab Volunteer Rifle Corps, for instance, compared with the old four mile limit). Events in other portions of the Empire have demonstrated in a remarkable manner that external calls on citizen soldiers have become a feature of the voluntary service. If there is any situation in the world more similar to that of Europeans in India it is that which exists in Natal. There is a question of degree of course. Up to 1902 the Colony was open to invasion from the north and north-west. It has still the most powerful Kafir tribe on its western border, and the white man is a mere fraction (8 per cent) of the entire population. Before 1903, apart from outside Imperial aid, it was dependent on a purely Volunteer Force; but what an infinitesimal portion of the men of that Force, who were called out for local defence on the 28th September 1899, imagined for a moment that it would not be before the expiration of several months that the General Commanding the Natal Field Force would be able to

dismiss them to their ordinary avocations. It was only when General Buller had quitted Natal territory and had got as far into the Transvaal as Standerton that he was in a position to tell General Dartnell that the Commander-in-Chief could dispense * with the services of the Natal Volunteers; and even then the dismissal was coupled with the condition that 300 mounted men should be re-enrolled to replace them to undertake the defence of the Dundee section of the eastern frontier, a task which was easily accomplished. Then, again, did any of the volunteers in India ever dream, on learning of the declaration of war in October 1890, that 250 of their number would sail for Africa in the following February and leave behind them there, within another couple of months, seven of their number killed in action, not to mention two who died from sickness and a number wounded? Even the stay-at-home British volunteer soon felt that the time had come to prove to the State that he was prepared to take up a burden for which he was never up to that period intended.

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To go back to the question, what is and what should be the *raison d'être* of the Volunteer Force of India? Old volunteers will remember being told a dozen reasons for their existence. One distinguished officer has told us that "the sooner the fact is recognised that the place of the infantry volunteer is behind a wall in his own district, and that he has neither the physique, ‡ the discipline nor the mobility of a soldier of the line, the better"; another that "he would be required to keep order in the district in which he resides, to overawe disaffection, to defend houses and hold positions and to keep open communications in troublous times." The defence of posts and outpost duty (two such totally different tasks) are advocated by another as the chief objects of our training. A colonel who knows something of his men has stated that "nothing contributed more to the efficiency and popularity of Volunteer Corps than the association of volunteers, as much as practicable, with the regulars at field-days" and that no alteration in the drill practised should be allowed which would interfere with such association." An officer who for many years administered the affairs of the Army in India, in advocating the establishment of a European and Eurasian militia, has remarked that

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‡ A year ago in England 159,000 out of 187,000 volunteers who were medically examined were found to be physically fit for active service. Surely the proportion for India cannot be less, or, at all events, much less.

"fortified posts (where women, children, the aged and infirm could be safely housed) would be trebly advantageous if we knew that their defence might be entrusted to a local militia and every British soldier set free for service in the field." In addition, he thought that in times of imminent danger this local force could garrison fortresses at the capitals, keep open lines of communication and take the places of troops in garrison. An able and popular volunteer leader has often impressed upon his men that their sole business would be to shepherd their wives and families into places of safety and there remain as a protection. One inspecting general has told volunteers that when troops are called away the former would act as a kind of police (military no doubt); another that they should practise the intercepting and capturing of convoys, and watch main lines of communications. A third devotes his entire attention to field-firing up the range; a fourth to skirmishing over open or broken country, praising or blaming chiefly the ability or inability displayed in taking intelligent cover, making rushes, and so forth. A fifth strongly advises the Commandant to supply each officer and non-commissioned officer—and even the men—with copies of "Combined Training this". A sixth and more enterprising general sends into camp overnight an abstruse problem involving the holding of a bridge of boats and a railway bridge in the early hours of dawn against regular troops. He allows the volunteers to take part with the troops of an adjacent garrison in the last of a four days' action, takes infinite pains to explain beforehand at what stage the mimic fight has arrived, what part the volunteers are expected to play, and at the conclusion devotes half an hour or more to criticising the results. It is work of this last description, it must be admitted, which the men really like, notwithstanding that it means leaving camp at 4 A.M. and returning at 4 P.M., and perhaps attending office after that hour to pull up arrears. It is a general of this type whom the men appreciate.

But when afterwards they come to reflect on it all, to review their season's work, they naturally wonder what, after all, they are being trained for, which of these conflicting authorities is right. Non-volunteers also must ask whether it is worth while to devote so many hours a week to drill and musketry in order to become efficient defenders behind a stone wall, for instance. They are not aware of the existence of any distinct pronouncement of any unmistakeable position assigned to them. Is it surprising that, as another authority says, "there is often a feeling of diffidence on the part of volunteers as a body appearing with regulars, arising more from an idea than anything else that their presence is regarded, not as absolutely necessary as a part of the regular forces, but only on sufferance as an act of courtesy"? Well might the enthusiastic volunteer say with the colonels who are stated to have recently assured Mr. Haldane that "we have been longing for years past for real functions and to be free from sham." For this, among other reasons, many Europeans at present hold off, often with the remark "Oh, time enough when there is any real necessity," thinking that

the amount of drill and musketry now required from the force will soon be picked up. I often wish that some of these had heard a volunteer Adjutant, who had just completed five years with a corps in North India, on this subject, when the point came up at an Officer's farewell dinner. "Well, gentlemen," he said, referring to the type of man indicated, "all I can say is that I pity you from the bottom of my heart when you have the training of such men in a time of emergency." I do not think the class I refer to here would be nearly so numerous if it was felt that something more than nine drills a year and a couple of mornings of musketry (sometimes only a single morning) was needed to make a "trained" volunteer; if he could be convinced that the State recognised the necessity of assigning to the force a definite place, a definite ideal, and so acted as to convince all classes that the time had come to organise the force, improve its training and make service so attractive as to ensure that a very large proportion of the 34,000 civilians shall be a real valuable reserve of strength.

It is not necessary to deal at much length with the abstention—almost universal—of the higher grades of the public services from anything connected with volunteering. Not a few causes have, from time to time, been assigned, not a few excuses have been made; the importance of securing an accession of strength from this source has even been questioned. Frequent transfers is one cause assigned, the old system of election for commissioned rank was another, "rubbing shoulders" another, and want of leisure. I believe, however, that most of the class would be captured if its members could be convinced that a real value is placed on voluntary service.

How, then, is Government to show in no uncertain manner that voluntary service is appreciated, and that in proof of such appreciation something more may now be required of the volunteer. It could be done, in part at least, in this way. The minimum number of drills must be raised considerably above nine. No corps can hope to be as efficient as inspecting officers now expect them to be if each man confined himself to nine drills a year. It is the men who attend many more than nine who stiffen the company, and who enable the officers to exercise fairly large numbers in company drill, skirmishing, and the like; and all should be encouraged to work beyond the minimum.* It does not seem at all good policy to pay a volunteer who puts in nine drills exactly the same capitation grant as is paid for the man who attends his thirty. A simple sliding scale in favour of the more enthusiastic volunteer would be found to pay. To quote from Mr. Arnold-Forster's speech to the 1st Volunteer Battalion of the North Stafford Regiment, at Henley, late last year, "the change should be based on the principle which I hold is the only true principle of the volunteer or any other force, namely, *more to the man who served you well and less to him who served you ill.*"

* In the drill season of 1905-06, sixteen of my men put in from 20 to 30 drills and sixteen from 15 to 19, not an unusual experience.

At least three times a year the volunteers should have the opportunity of drilling with whatever regular troops may be available, and the annual inspection should invariably take place in conjunction with such troops, even if only a company, Native or European, happens to be in the neighbourhood. At least twice a year an officer of or above field rank should be deputed from the nearest cantonment to attend unexpectedly any ordinary parade and either take the men in hand himself or criticise the work after drill. Another should be deputed to see twice a year as many men as possible going through their musketry course. The men would soon get to feel then that some value was being placed on their work, that the eye of the General Officer Commanding the brigade or division was *always* on them; new interest would thus be introduced. All this would have the additional advantage too of making a large number of military officers better acquainted with the force.

There is, perhaps, no fault to be found with the present musketry course, but in connection with it three drills at least in the season should be devoted to field-firing, each exercise preceded by careful but brief instruction relating to it. I would also strongly advocate grants-in-aid to company rifle clubs, on condition that their rules be made subject to the approval of the General commanding the division or brigade, who would as a rule, probably always insist upon practical shooting.

Training generally should not be of too limited a nature, the officers and men should be encouraged to go *as far as it is possible to take them*; in fact no standard should be considered too high. We can never expect to be equal to the regular soldier, but men who put in from twenty to twenty-five consecutive years of drill, on an average of twenty a year, in addition to musketry courses, company rifle club shooting and corps prize meeting shoots, cannot, after all, be very far behind.

Another way in which the State may show its appreciation of the volunteer's service is by the grant of some minor, yet useful, concession. Personally, I do not like the term "concession to volunteers," but I am gradually being forced round to the conviction that steps in this direction must sooner or later be taken if the volunteer movement is not to languish, and if better work is to be obtained. But the cardinal point of such concessions should be that they are an indication of approval and recognition of *more than ordinary service*. The "nine drill" man would, as a rule, have small chance of thus obtaining special recognition. The unanimity of opinion, expressed by governors of provinces downwards, in favour of a remission of income-tax is surprising, but it is such an impracticable measure, under existing circumstances in India, that the idea must be abandoned. Apart from all other considerations, apart from the fact that it savours too much of direct money payment for voluntary service, we cannot get away from the other fact that first and foremost we are members of a civil community and must, as such, bear our proportion of this tax, designed primarily at all events

as a provision for defensive purposes. Pensionary and leave advantages cannot be made universal, as a large element of the force is non-official. But I see no objection to concessions in railway travelling and of passages in troopships. They would cost the State practically nothing. As regards cheap fares for railway travelling, theatrical companies, cricket, polo, hockey and football teams and school children and railway employes already enjoy the privilege. Surely it is not asking too much to extend it to the best volunteers of the force. Many non-combatant members of the Army obtain passages in troopships, and although a large number of volunteers could not avail themselves of this means of getting to England, yet a fair proportion would always be willing to do so, and it would be something to know that this means of getting home is always open if it can be earned. What also could be a more harmless privilege than to allow officers to pass language tests on the same conditions and with the same rewards as officers of the regular service? Indeed, I would even extend this privilege to sergeants.

A word in conclusion about cadets. There is no more encouraging feature in volunteering than the greater attention which is now paid to the training of cadets in India. It is no small thing to have nearly 5,000 boys all over India undergoing instruction in the use of arms. The cadets thus constitute a most valuable asset to the State, and I would make it still more worth while to school managers to encourage their boys to qualify as little soldiers. The eight-anna grant-in-aid is certainly an inducement, but I would double it for extra efficiency in physical drill. The Inspector-General does not like to see small boys in the ranks, but it is the small boy who rapidly develops under military exercise, and if Natal insists upon every lad over 12 years of age being a cadet, we should have no hesitation in following suit in India. I am not sure that we fully tap this source even yet. On the 31st March 1905 there were 16,667 boys in schools in India. Allowing that large proportion of this figure represents children under the age of 12 years, it seems that there should be a surplus of over 5,000 who are fit for military training.

I feel I have only touched the fringe of this vitally important question of voluntary service. My excuse for endeavouring to arouse interest in it lies in the fact that I have given twenty-five years of such service to the State with pleasure, passing through every grade from recruit to company commander. I have witnessed years of enthusiasm, I have passed through drill seasons when indifference has been the predominant feature. Knowing my comrades as I do intimately, I unhesitatingly say that the majority of material which could be most usefully moulded is really excellent. And, finally, I feel that the time has arrived for measures which may tend to arouse enthusiasm, swell our ranks, and make the Volunteer Force at least twice as efficient as it is now and stronger by not a few thousand men.

NOTES FOR ' Q ' CANDIDATES

BY MAJOR G. F. MACMUNN, D. A. A. G., DERAJAT BRIGADE.

The following notes may be of use to candidates working or " Q " examination.—

After being the victim as a " Q " candidate and attending numerous " Q " manœuvres, there are several points which one sees come to the fore every time. Tactics, especially the minor tactics that forces, the size usually taking part in " Q " manœuvres, can indulge in, are governed by a few salient points. These salient points or rather general rules should be easily mastered, and once this has been done, " Q " problems, and what is far more important, though only one in a dozen will recognise it, minor problems in the field present no difficulty.

It is no uncommon thing to hear a " Q " candidate say " Oh, but I should not have done that, if it had not been an exam.' Such a remark is enough to make the Recording Angel weep salt tears! Examinations exist, not as a fence that officers must clear before promotion, but to force those who wont read to study their profession. An officer who is up in his regimental work and the regulations connected therewith, who has devoted an evening a week to study his profession, need never fear any promotion examination.

If a man would pass his " Q," he has only to try and forget his board and himself, and to busy himself with the problem before him, to try and steep himself in the General and Special Idea. To take action he believes to be unsound, because he thinks the Board hypercritical and fantastic, is but to meet disaster halfway.

Anent Boards, it should be remembered that they are benevolently inclined, and unless exasperated by arrogance, or "*quacking*" on the part of the candidate, prepared to stretch several points in favour of the candidate, if he only works in a quiet businesslike way. As regards the Board itself, some of its members quite recently have been through the same test, and if, as must naturally be the case, they are competent men, they have but two objects, first, to see that you know enough to be trusted with the lives of that number of officers and men which the fortune of war might place under the command of an officer of your rank; secondly, to assure themselves that you are in a fair way to be able to train officers under you, to the right knowledge of field tactics.

The following "good advice" is tendered in all humility to those unfortunates for whom the " Q " Board grimly wait:—

- (1) Do not explain to the Board that you have not seen troops for ages and know very little about them; it wont help you. (This was recently done by an officer.)

- (2) Do not demand too much paraphernalia, such as Orderly Officer, Signallers, Signalling Officer, etc. You are not going to command a Division, and will get on all right with your one Staff Officer.
- (3) Remember that all officers with the units working for you, know they have the same ordeal before them. They and the troops too, will "play up" well for you. Therefore let them do their own job. Their mistakes will be as patent to the Board as to you, who will certainly make allowances.
- (4) Once you have made up your mind, let well alone. "The best is the enemy of the good." A fair scheme, boldly carried through, will serve you better both at examinations and in war, than a better one which entails change of plan, with countermanding and vexation. Once you have launched your troops, except so far as the employment of any reserve you may have is concerned, you must let the regimental officers develop your plans to the best of their lights. This is the lesson of war, especially of modern breech-loading war.
- (5) Therefore because of the above, you can do no good interfering and you must always remain at some central spot where you can be found, only moving from one to the other, as the operations develop. If you are of a nervous temperament and itch to put the Cavalry or Infantry leader right, tie yourself to a tree, or get on a roof and have the ladder removed. This, it is said, was what his Staff did to Lord Gough at Goojerath, so that when he forgot all his schemes for an Artillery preparation and would desire to order the bayonet, he would not be able to get to his horse. The story is probably untrue, but it illustrates the point. Now turning to the general principles of very minor tactics we do not perhaps yet realise what a tremendous stride in training the appearance of "combined training" has been.

Here for good or evil is a definite plan, a definite tactical train of thought, which we are to absorb. A candidate who has read one book on tactics, will not be examined by a man who has read another. A General knows that his subordinates will act in a certain definite way, it gives a system, and that definite train of thought, which is so imperative for successful manœuvring.

The candidate for tactical examination has but to know his "combined training." If he can succeed in crystallizing out a few salient rules that must govern his action, problems in the field should lose their terrors.

Now for the mere purposes of examination, it is as well to understand what may be before the Commander of a "Q" force.

That force is a small one—from one to two battalions, one to four squadrons, two guns to a whole battery. Such a force when

it is acting in prosecution of some general strategical and tactical scheme can act but in few rôles. It may be—

- (a) An advanced guard.
- (b) A rear guard.
- (c) A flank guard.
- (d) A detached force carrying out some definite operation.
- (e) The escort to a convoy.

A very few general rules will settle the manner in which the Commander of such forces must act.

An advanced guard.—The business of the advanced guard is to push, to find out what is in front, to ensure that the main body commander should have some definite information of what is in front of him. Nothing is more exasperating to a Commander than to find that his advanced guard has been "footling about" with half a dozen "bad men," without penetrating the screen or finding out what position is being definitely held.

It is a common fault, and a very bad one, for the advanced guard commander, to "prop" when he sees the enemy.

It follows that, as it is the advanced guard commander's business to push, it is not for him to make wide turning movements. When he finds himself in touch with the enemy, along the main route he is pursuing, it is his business to push on, on that route, until he bumps his head against something solid. The tactical turning movements will be extremely local. It will be for the commander of the main force to initiate wide movements.

In a pursuit the tactics of an advanced guard are even bolder than in ordinary times. It is, as a rule, not the business of an advanced guard to get entangled with the enemy beyond extrication, but in the pursuit, he may go baldheaded for the enemy. Between avoiding entanglement, and sticking your toes in the ground at the first Tic-Toc you hear there is a very wide opportunity for bold and useful action.

Now remember always that there is not one rule for the manœuvre field and another for war. Whether in the Long Valley, on West Ridge, on the Razmak, or the Modder, the duty of the advanced guard is to push till it strikes bed-rock. If half a dozen Mahsuds snipe from a Kotal, or a dozen Boers volley from a Spruit it is not the business of the advanced guard commander to burst into tears and shout for the Corps Artillery. (Combined Training, 59, 2.)

The rear guard.—What are the duties of the rear guard? They are so simple that no one can go wrong, *viz.*, to let the main force move unmolested. This naturally implies the not forcing it to return to extricate the rear guard. The rear guard deploys, fires long range Artillery fire, frightens, and slips away. The difficulty of course lies in knowing when to slip away. This depends on various often conflicting factors, particularly the distance of the main body and the nature of the country.

A rear guard either is (a) merely following a main force withdrawing without hitch, or (b) is fighting hard against time. In

the former case, but a fraction of the force may have to be deployed. In the latter, the whole

The Commander in the latter case must reconnoitre himself, or send one of his Staff, to select the point or successive points on which to make his determined stands. He may then slip away quietly till he has reached his selected positions

While slipping away it is best to have the rear guard in two portions, which retire alternately till they reach the "last ditch," if such a position be demanded of them. The artillery, unless very slow moving, must be kept well in the fighting line and not retired early.

A flank guard.—The duties of flank guards are nearly identical with those of a rear guard, *viz.*, to give the force they protect time to escape, to move to some favourable position, or to deploy. That is to say they stand their ground, and at every stage of a flank guard's progress, the Commander must be considering where he will stand if attacked.

The habit of constantly reflecting on action to be taken if attacked under varying circumstances, is a most valuable one to acquire, whether out with troops or when riding alone.

Escort to a convoy.—The escorting of a convoy that is liable to attack is one of the most difficult duties that a soldier can be entrusted with. The odds on the attacker are tremendous. A convoy is always more or less slow moving, and unless the escort is much stronger than the enemy, is certain to be forced to laager till rescued, even if it be not captured.

The question then is how shall the escort act? and the answer must depend on the country. If an obstacle crossed by a defile can be placed between convoy and enemy, the escort becomes a rear guard during the passage of the defile. If a defile is to be passed it must secure the defile by pushing some of its troops on. If the convoy is in the open and the attack threatens, the escort by forming front in the direction of the attack only leaves the convoy bare to the enemy's cavalry. The wisest plan is, if the attack is made in any force, to laager on the best ground available and hope for succour.

An Officer Commanding a convoy escort must realise that he will most likely have to do this, and from the point of view of an examination, must not be alarmed if he is compelled to do so. The fact of a candidate being given a difficult or impossible task, and failing to carry it out, may enable him to display his capacity to great effect, and is by no means to be looked on as a disadvantage.

A detached force that is not of one of the foregoing natures, will have some very definite task to perform. Its rule will be prompt action. It can either move at once to carry out its objective, or must move on some definite point where more information will be probable.

The formation of plans.—Those who are reading for examinations and for their own tactical training will do well to practice

putting their own ideas of a situation briefly on paper constantly. It is not so easy to do, as it sounds, and the habit of doing so trains the mind to frame its views promptly. Directly a problem is propounded views should be jotted down, it simplifies the solution considerably.

The writing of orders.—The force that has to be commanded, will have been in the field some time, and will have its standing orders, and may be credited with observing the standing customs of an army. The clogging of operation orders with routine orders, and bits out of standing orders must be avoided. It is not necessary to order a day's ration to be carried, or hot tea to be issued in the morning, or any of the other hundred and one points that are a matter of habit and routine, and have nothing to do with operations. Remember that a man without his rifle is an efficient soldier till the moment he is called on to use it, while a man without his day's food is absolutely useless. Therefore if you don't think it necessary to order every man to bring his rifle, why order every man to carry his day's food? This is as essential a part of his equipment as his weapon and his bandolier.

Again it is not necessary to order "signalling communication from front to rear of the column" and kindred instructions. The mere fact that the position of the O. C. is noted in orders implies signalling communication, automatically, as a matter of routine training.

To avoid verbiage that clogs orders and crowds the pages of the field pocket-book, try and adopt some formula that will save it, thus instead of saying "The advanced guard will move at 7 A.M., the main body will move at 7-30 A.M., etc.," the following is the businesslike way of commencing orders. After the intentions of the Commander are given, orders may follow in some such style:—

3. With the above object, the force will advance on the Peshawar road as follows (detail in margin).

(a) Independent cavalry to seize the Indus crossings at 6 A.M.

(b) Advanced guard 7 A.M.

(c) Main body 7-30 A.M., etc., etc., etc.

It will be found that a little manipulation of phrases and sub-paragraphs will clear orders of many useless words.

The specimen order is far from being a model "Independent Cavalry" are usually three marches ahead, *vide* C. T. If not, why should the Advanced Guard do nothing for an hour. You should never order any one to try and do so and so."

A VETERINARY STAFF FOR THE TRANSPORT SERVICE IN INDIA.

BY CAPTAIN H. A. SULLIVAN, ARMY VETERINARY CORPS.

The Transport Service in India is, I believe, second to none in the world in efficiency, a happy state of affairs probably due to two things—(a) the employment of native labour under intelligent European direction ; (b) the numberless small wars in which the country is continually involved which tend to bring to light defects which would otherwise be overlooked.

One defect at least however remains. It has not been overlooked, on the contrary it has been represented from time to time by several officers and was brought forward also by the Transport Committee of 1898, and that is the all-important question of Veterinary supervision of Transport animals

There are (*vide* statement attached) about 32,599 animals of all sorts in the Transport Service in peace time distributed over India and Burma, which on mobilisation will be increased to over 50,000. These animals are subject to such contagious and infectious diseases as Glanders, Anthrax, Rinderpest, Foot and Mouth Disease, Surra, Epizootic Lymphangitis, Mange, etc., and the responsibility for the freedom of this large number of animals from the diseases any or all of which might paralyse the Transport Service at a critical moment, rests with Salootris who for the most part have only had three months' training in ordinary hospital work and many of whom have never seen, and would not recognise if they did see, any of these serious contagious diseases from which animals suffer.

This defect is undoubtedly a very serious one and one deserving of much attention. It has not been overlooked, but the question has rather been whether it were better from the State's point of view to risk a certain amount of loss from these diseases, or incur a recurrent annual expenditure by providing a properly qualified Veterinary Staff to supervise the Veterinary arrangements of the Transport Service. At first a sort of compromise was resorted to, and whilst Salootris were in charge of Transport Units, Veterinary Officers were detailed to inspect them monthly or bi-monthly. This of course was not satisfactory for in the first place there were a number of stations where Transport Units were stationed where there was no Veterinary Officer, and where the services of a Veterinary Officer were available he naturally did not take that amount of interest in animals which he saw once a month or once in two months as in animals with which he was in daily contact. All this, however, has long since been done away with, and the regulations which now bear on the inspection of Transport animals are para. 720, Vol. II, A. R. I., and para. 10, Vol. VIII, A. R. I., as follows :—

Para. 720, Vol. II :—“ Except on Field Service officers of the A. V. Corps are not to be called upon to attend the animals of Mountain Batteries, Silladar Cavalry and the Supply and Transport Corps, but

- (2) Do not demand too much paraphernalia, such as Orderly Officer, Sergeants, Signaling Officer, etc. You are not going to command a Division, and will get on all right with your one Staff Officer.
- (3) Remember that all officers with the units working for you know they have the same ordeal before them. They and the troops too will "pay up" well for you. Therefore let them do their own job. Their mistakes will be as potent to the Board as to you, who will certainly make allowances.
- (4) Once you have made up your mind, let well alone. "The best is the enemy of the good." A fair scheme, badly carried through, will serve you better both at examinations and in war, than a better one which entails change of plan, with countermanding and vexation. Once you have launched your troops, except so far as the employment of any reserve you may have is concerned, you must let the regimental officers develop your plans to the best of their lights. This is the lesson of war, especially of modern breech-loading war.
- (5) Therefore because of the above, you can do no good interfering and you must always remain at some central spot where you can be found only moving from one to the other, as the operations develop. If you are of a nervous temperament and itch to put the Cavalry or Infantry leader right, tie yourself to a tree or get on a roof and have the ladder removed. This, it is said, was what happened to Lord Gough at Gieporth, so that when he forgot all his schemes for an Artillery preparation and would desire to order the bayonet, he would not be able to get to his horse. The story is probably untrue, but it illustrates the point. Now turning to the general principles of very minor tactics we do not perhaps yet know what a tremendous stride in trying the application of combined training has been.

Here for good reason, is said to be plan, a definite, twofold train of thought which would be useless. A candidate who has read one book on tactics will not be excelled by a man who has read another. A General knows that his subordinate will act in a certain definite way, it gives a system, and that definite train of thought, which is so important to a successful maneuvering.

The candidate that has no imagination is but to know his "combined training." He does so, by crystallizing out a few sentences, that must be followed as a uniform pattern in the field should the orders come.

Now that the main purpose of examination it is as well to understand what may be before the Candidate for a "Q" Trial.

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it is acting in prosecution of some general strategical and tactical scheme can act but in few rôles. It may be—

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It follows that, as it is the advanced guard commander's business to push, it is not for him to make wide turning movements. When he finds himself in touch with the enemy, along the main route he is pursuing, it is his business to push on, on that route, until he bumps his head against something solid. The tactical turning movements will be extremely local. It will be for the commander of the main force to initiate wide movements.

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the former case, but a fraction of the force may have to be deployed. In the latter, the whole.

The Commander in the latter case must reconnoitre himself, or send one of his Staff, to select the point or successive points on which to make his determined stands. He may then slip away quietly till he has reached his selected positions.

While slipping away it is best to have the rear guard in two portions, which retire alternately till they reach the "last ditch," if such a position be demanded of them. The artillery, unless very slow moving, must be kept well in the fighting line and not retired early.

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The habit of constantly reflecting on action to be taken if attacked under varying circumstances, is a most valuable one to acquire, whether out with troops or when riding alone.

Escort of a convoy.—The escorting of a convoy that is liable to attack is one of the most difficult duties that a soldier can be entrusted with. The odds on the attacker are tremendous. A convoy is always more or less slow moving, and unless the escort is much stronger than the enemy is certain to be forced to fight to the rescue, even if it be not captured.

The question then is how shall the escort act, and the answer must depend on the country. If an obstacle crossed by a defile can be passed between a convoy and an enemy, the escort becomes a rear guard during the passage of the defile. If the troops can be passed, it must be done by pushing some of its troops on. If the convoy is in the open and the attack threatens the escort by turning front in the direction of the attack only leaves the convoy bare to the enemy's sword. The wisest plan is if the attack is made in any form, to engage on the best ground available and hope for success.

An Officer Commanding a Convoy's escort must realise that he will most likely have to do this, and from the point of view of an examination must not be alarmed if he is compelled to do so. The fact of a candidate being given what is for all possible tasks, and trying to carry it out may even be limited display his capacity to grapple with a task by no means to be looked upon as a disadvantage.

A detailed description of the duties of the foregoing positions, will have to be given of the task to perform. It is rare will be prompted. It is not to be expected that every candidate will be perfect in the selection of the point where the attack will be possible.

Instructions to troops.—It is well to have a list of the instructions which should be given to the troops when they are well to practice

putting their own ideas of a situation briefly on paper constantly. It is not so easy to do, as it sounds, and the habit of doing so trains the mind to frame its views promptly. Directly a problem is propounded views should be jotted down, it simplifies the solution considerably.

The writing of orders.—The force that has to be commanded, will have been in the field some time, and will have its standing orders, and may be credited with observing the standing customs of an army. The clogging of operation orders with routine orders, and bits out of standing orders must be avoided. It is not necessary to order a day's ration to be carried, or hot tea to be issued in the morning, or any of the other hundred and one points that are a matter of habit and routine, and have nothing to do with operations. Remember that a man without his rifle is an efficient soldier till the moment he is called on to use it, while a man without his day's food is absolutely useless. Therefore if you don't think it necessary to order every man to bring his rifle, why order every man to carry his day's food? This is as essential a part of his equipment as his weapon and his bandolier.

Again it is not necessary to order "signalling communication from front to rear of the column" and kindred instructions. The mere fact that the position of the O. C. is noted in orders implies signalling communication, automatically, as a matter of routine training.

To avoid verbiage that clogs orders and crowds the pages of the field pocket-book, try and adopt some formula that will save it, thus instead of saying "The advanced guard will move at 7 A.M., the main body will move at 7-30 A.M., etc.," the following is the businesslike way of commencing orders. After the intentions of the Commander are given, orders may follow in some such style:—

3. With the above object, the force will advance on the Peshawar road as follows (detail in margin).

(a) Independent cavalry to seize the Indus crossings at 6 A.M.

(b) Advanced guard 7 A.M.

(c) Main body 7-30 A.M., etc., etc., etc.

It will be found that a little manipulation of phrases and sub-paragraphs will clear orders of many useless words.

The specimen order is far from being a model "Independent Cavalry" are usually three marches ahead, *vide* C. T. If not, why should the Advanced Guard do nothing for an hour. You should never order any one to try and do so and so."

A VETERINARY STAFF FOR THE TRANSPORT SERVICE IN INDIA.

BY CAPTAIN H. A. SULLIVAN, ARMY VETERINARY CORPS.

The Transport Service in India is, I believe, second to none in the world in efficiency, a happy state of affairs probably due to two things—(a) the employment of native labour under intelligent European direction ; (b) the numberless small wars in which the country is continually involved which tend to bring to light defects which would otherwise be overlooked.

One defect at least however remains. It has not been overlooked, on the contrary it has been represented from time to time by several officers and was brought forward also by the Transport Committee of 1898, and that is the all-important question of Veterinary supervision of Transport animals.

There are (*vide* statement attached) about 32,599 animals of all sorts in the Transport Service in peace time distributed over India and Burma, which on mobilisation will be increased to over 50,000. These animals are subject to such contagious and infectious diseases as Glanders, Anthrax, Rinderpest, Foot and Mouth Disease, Surra, Epizootic Lymphangitis, Mange, etc., and the responsibility for the freedom of this large number of animals from the diseases any or all of which might paralyse the Transport Service at a critical moment, rests with Salootris who for the most part have only had three months' training in ordinary hospital work and many of whom have never seen, and would not recognise if they did see, any of these serious contagious diseases from which animals suffer.

This defect is undoubtedly a very serious one and one deserving of much attention. It has not been overlooked, but the question has rather been whether it were better from the State's point of view to risk a certain amount of loss from these diseases, or incur a recurrent annual expenditure by providing a properly qualified Veterinary Staff to supervise the Veterinary arrangements of the Transport Service. At first a sort of compromise was resorted to, and whilst Salootris were in charge of Transport Units, Veterinary Officers were detailed to inspect them monthly or bi-monthly. This of course was not satisfactory for in the first place there were a number of stations where Transport Units were stationed where there was no Veterinary Officer, and where the services of a Veterinary Officer were available he naturally did not take that amount of interest in animals which he saw once a month or once in two months as in animals with which he was in daily contact. All this, however, has long since been done away with, and the regulations which now bear on the inspection of Transport animals are para. 720, Vol. II, A. R. I., and para. 10, Vol. VIII, A. R. I., as follows :—

Para. 720, Vol. II :—“ Except on Field Service officers of the A. V. Corps are not to be called upon to attend the animals of Mountain Batteries, Silladar Cavalry and the Supply and Transport Corps, but

on the outbreak of contagious or infectious disease, the Officer Commanding the Station will at once take steps for the attendance of the Veterinary Officer in whose charge the station is."

Para. 10, Vol. VIII:—"The Inspecting Veterinary Officer will, under the orders of the Lieutenant-General Commanding, inspect all public animals in the Military Service in the Command at least once yearly and enquire into all matters relating to the preservation of their health."

This virtually means that this large number of Transport animals still remains in the hands of Salootris, who, though excellent in some ways, are in many others quite unfitted by their training for the responsibility which at present rests upon them.

The disadvantages of this system are—

1. That serious contagious disease may exist in a Transport Unit and not being diagnosed will most assuredly, through the nature of Transport work, be spread to other units in the station. An example of this occurred quite recently in Poona where Epizootic Lymphangitis was existent for some time in the 13th Mule Corps before it was accidentally discovered, unfortunately not soon enough to prevent infection of batteries at Kirkee.

2. Salootris after they have passed through a course are not brought in contact with Veterinary Officers except at the Inspecting Veterinary Officer's inspection, on the outbreak of contagious disease, or when going up for promotion, with the result that they have a tendency rather to forget what little they have learnt than to improve their knowledge.

3. That the Transport Officer (frequently an Infantryman) has no one to whom he can turn for advice on subjects which are necessarily beyond the ken of his Salootri, on such subjects for instance as the fitness and suitability of remounts received, the diagnosis of difficult cases of lameness as to which animals should or should not be cast, whether the shoeing in his Corps is properly carried out, whether his Salootri is or is not up to the mark in his professional knowledge.

4. The casting of animals from Transport Units primarily depends on the Salootri. The Salootri unable to cure a case of lameness (very often because he does not know the cause or seat of it) brings it up before the Officer Commanding the Unit who knowing no more, or even less, about it than the Salootri and only knowing the animal has been lame for a very long while, brings it up with others before the Officer Commanding Divisional Transport, who necessarily knows less about it than the Officer Commanding the Unit and the Salootri. He in turn brings it up before the General Officer Commanding who of course knows even less of the case than any of them and the animal is cast. No Veterinary Officer sees the case from beginning to end and undoubtedly great wastage occurs from this cause.

To obviate these difficulties, Veterinary supervision of Transport Units is undoubtedly necessary and the question arises how this should be provided, whether—

- (a) by increasing the A. V. Corps by a certain number of officers and detailing them as necessity arises to supervise Corps;
- (b) by establishing a Veterinary Staff for the Transport Corps identical in every way with the Remount Veterinary Staff.

The former way has practically been tried and found useless. I do not say that the A. V. Corps has ever received a few additional officers for the work, but without these few inspections have been arranged and carried out, and not being a success it was dropped and we cannot anticipate any different result because a few additional officers are added to the Corps. It must be borne in mind that many stations where Transport Units are stationed are far away from any Station Veterinary Hospital, such for instance as Thayetmyo, Shwebo, Meiktila, Cannanore, Wellington, Lyallpur, Multan, Montgomery, Shahpur, Hasan Abdal, etc., and when these additional Veterinary Officers, spared from other duties, come to inspect the Transport in these stations, such inspection will savour much of the inspections already done away with.

Such a scheme I consider impracticable, and if adopted foredoomed to failure.

The second scheme I am strongly in favour of, and we have the strongest argument in its favour in the present efficiency of the Remount Department.

The scheme suggested is as follows :—

Scheme for the Provision of a Transport Veterinary Staff.

It is suggested that the Transport Corps should have its own staff of Veterinary Officers in the same way as the Remount Staff.

That the staff be composed of one senior Veterinary Officer who would be Personal Assistant to the Inspector-General of Supply and Transport and eight Executive Veterinary Officers as under :—

Northern Command	...	...	...	2
Eastern Command	...	..	...	1
Western Command	...	...	...	1
Secunderabad Division	...	...	...	1
Burma	...	...	..	1
Special Officer in charge of Camel Corps...	...	...	...	1
Reserve Officer	...	...	...	1
				8

Duties of the administrative and Executive Veterinary Officers :—

The administrative Veterinary Officer would be responsible to the Inspector-General of Supply and Transport for all the work in the Supply and Transport Units. He would be responsible for the posting of the Executive Veterinary Officers and would tour throughout India and Burma to satisfy himself in regard to the proper carrying out of all Veterinary arrangements and would advise the Inspector-General in regard to all Veterinary questions.

The Executive Veterinary Officers would tour throughout their Commands inspecting all corps and cadres and lecture periodically to those various corps on Veterinary matters *especially* in regard to contagious diseases. They would report at once to the senior Veterinary Officer any outbreak of contagious disease and the steps taken to prevent its spreading.

During their tour they would arrange to spend some time in each station assisting with their advice in regard to animals proposed to be purchased or sold, would advise in regard to dietetics and hygiene, would inspect the shoeing and see that this was properly carried out, would lecture on the anatomical principles on which saddle fitting is based and the means adopted to keep animals at work on service with sore backs, would examine the Veterinary Assistants for promotion and see that they were up to their work at all times, would examine all animals detailed for service both as regards their soundness and their freedom from contagious disease, and would upon service with their own Transport.

To see how such a scheme would work out in practice let us take for the moment the Northern Command containing 17280 Transport animals on a peace footing *Table* statement on pp. 81-83.

Under the scheme two Veterinary Officers are allotted to the Northern Command and one Veterinary Officer is specially detailed to study the diseases of camels.*

The officer detailed to study camel diseases would take charge of the following stations—Lyallpur, Mian Mung, Montgomery, Shalpur and Campbellpur with his headquarters at Lyallpur where there are four Camel Corps. This would cover 12 stations in the Command with 12906 animals other than camels for division between the two Veterinary Officers of the Command. One of these would take Rawalpindi as his headquarters where there are 3263 animals and the other Unbala where there are 2520 animals, divide the 12 stations between them on 6 stations each with about 6498 animals apiece. Giving one month to each station they visited they would complete their tours in six months when the round might be begun again. From this it will be seen that though each officer has over 6000 animals under his charge he would be able to devote quite a large proportion of time to each unit. It would not be a case of inspection one day and off again the next, but an appreciable period would be spent with each Corps during which time they would go thoroughly into all Veterinary matters connected with the Corps. At their respective headquarters they would arrange for the thorough instruction of NCOs in shoeing where they would be drafted to the units. At road and inspection stations the Veterinary Officers below in comparison to the number of animals to be dealt with

* The Veterinary Officer detailed to study camel diseases would be a member of the Veterinary Staff of the Northern Command and would be detailed to the stations mentioned above for a period of six months. He would be assisted by a Veterinary Assistant who would be detailed to the same stations for a period of six months. The Veterinary Officer would be detailed to the stations mentioned above for a period of six months. He would be assisted by a Veterinary Assistant who would be detailed to the same stations for a period of six months.

they would nevertheless be in thorough working touch, not only with the Transport animals, but with Salootris, a matter of great importance when proceeding on active service.

The result of such supervision would undoubtedly add to the efficiency of the Corps in many ways. The Salootris would be kept up to their work, the expenditure of medicines would be controlled, the general health of the animals improved by attention to dietetics and hygiene, the shoeing would be improved, expert advice would be available in cases of lameness, casting and purchase and in the examination for soundness before proceeding on service, and in short Transport animals proceeding on service would be thoroughly overhauled by the Veterinary Officers in whose charge they had been for some time past and would take the field still under his charge instead of shifting for themselves as has hitherto been the rule.

Statement showing number and distribution of Transport Animals in India and Burma.

[Compiled from the Indian Quarterly Army List of April 1906.]

Stations.	Mule Corps.	Mule Cadre.	Pony Cadre.	Camel Corps.	Bullocks (half troop).	Total number of animals.
NORTHERN COMMAND.						
Peshawar ...	2	1	...	...	2	2,009
Nowshera ...	1	...	...	...	1	903
Rawalpindi ...	2	4	...	1	8	3,263
Umballa ...	2	2	1	...	6	2,520
Hasan Abdal ...	1	...	...	...	...	855
Sialkote ...	1	...	...	...	1	903
Kohta ...	1	...	...	...	...	855
Jhelum ...	...	1	...	1	...	560
Ferozepore ...	...	1	...	...	5	443
Jullundur ...	...	1	...	...	2	299
Campbellpur ...	...	...	...	1	...	357

Statement showing number and distribution of Transport Animals in India and Burma—(continued).

Stations.	Mule Corps	Mule Cadre	Pony Cadre	Camel Corps	Bullocks (half troop).	Total number of animals.	
NORTHERN COMMAND—contd.							
Shahpur ... ..	...	...	...	1	...	357	
Montgomery ... ..	...	...	...	2	...	714	
Multan ... ..	...	...	...	1	2	453	
Mian Mir ... ..	...	...	4	1	...	1,169	
Lyallpur ... ..	...	...	...	4	...	1,428	
Lahore ... ..	...	...	...	...	4	192	17,280
WESTERN COMMAND							
Quetta	2	...	...	2	4	2,616	
Mhow	1	...	...	...	2	981	
Poona	1	...	...	...	1	903	
Karnachi	1	1	...	...	3	1,272	
Ahmedabad ... ..	...	...	...	...	1	48	
Kanpur ... ..	...	...	...	...	3	144	
Deesa ... ..	...	...	...	...	2	96	
Jubbulpore ... ..	...	...	...	...	3	144	
Bangor ... ..	...	...	...	...	1	48	
Dharan ... ..	...	...	...	...	2	96	
Nagpur ... ..	...	...	...	...	1	48	
Bilaspur ... ..	...	...	...	1	14	72	6,564
EASTERN COMMAND							
Meerut	1	2	...	...	5	1,561	23,648
Baran	1	...	1	...	6	1,279	
Delhousie ... ..	...	1	...	...	5	413	
Mittha ... ..	...	...	...	...	...	24	
Agra ... ..	...	...	...	...	4	192	

*Statement showing number and distribution of Transport
Animals in India and Burma—(concluded).*

Stations	Mule Corps.	Mule Cadre.	Pony Cadre.	Camel Corps	Bullocks (half troops)	Total number of animals.	
EASTERN COMMAND—contd.							
Delhi	2 sections	24	
Saharanpur	2	96	
Roorki	1	48	
Fyzabad	1	48	
Allahabad	7	336	
Cawnpore	2	96	
Dinapore	1	48	
Calcutta	7	336	4,461
SECUNDERABAD DIVISION.							
Bangalore ..	1	...	...	...	3	999	
Secunderabad ...	1	...	...	...	4	1,017	
Bellary	1½	72	
Madras	4	192	
Wellington	1	48	
Cannanore	1	48	2,406
BURMA DIVISION.							
Mandalay ...	1	...	.	..	1	903	
Meiktila ...	1	...	...	...	2 sections	879	
Shwebo	1	12	
Thayetmyo	3	36	
Bhamo	2	24	
Rangoon	5	240	
						Total ...	32,599

The Executive Veterinary Officers would tour throughout their Commands inspecting all corps and cadres and lecture periodically to these various corps on Veterinary matters *especially* in regard to contagious diseases. They would report at once to the senior Veterinary Officer any outbreak of contagious disease and the steps taken to prevent its spreading.

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To see how such a scheme would work out in practice let us take for the moment the Northern Command containing 17,280 Transport animals on a peace footing (*vide* statement on pp. 81—83.

Under the scheme two Veterinary Officers are allotted to the Northern Command and one Veterinary Officer is specially detailed to study the diseases of camels.*

The officer detailed to study camel diseases would take charge of the following stations :—Lyallpur, Multan, Montgomery, Shahpur and Campbellpur with his headquarters at Lyallpur where there are four Camel Corps. This would leave 12 stations in the Command with 12,996 animals other than camels for division between the two Veterinary Officers of the Command. One of these would take Rawalpindi as his headquarters where there are 3,263 animals, and the other Umballa where there are 2,520 and divide the 12 stations between them or 6 stations each with about 6,498 animals apiece. Giving one month to each station they visited they would complete their tours in six months when the round might be begun again. From this it will be seen that though each officer has over 6,000 animals under his charge he would be able to devote quite a large proportion of time to each unit. It would not be a case of inspection one day and off again the next, but an appreciable period would be spent with each Corps during which time they would go thoroughly into all Veterinary matters connected with the Corps. At their respective headquarters they would arrange for the thorough instruction of Nalbands in shoeing, whence they would be drafted to their units. Worked on this system though the Veterinary Officers be few in comparison to the number of animals to be dealt with

* Up till quite recently no special officer has been appointed to study the diseases of camels of which we know nothing.

A Civilian has now been appointed, but, as he will not proceed with troops on service, the knowledge gained by him will be useless to the military authorities, nor will he have any knowledge of camel diseases on service.

they would nevertheless be in thorough working touch, not only with the Transport animals, but with Salootris, a matter of great importance when proceeding on active service.

The result of such supervision would undoubtedly add to the efficiency of the Corps in many ways. The Salootris would be kept up to their work, the expenditure of medicines would be controlled, the general health of the animals improved by attention to dietetics and hygiene, the shoeing would be improved, expert advice would be available in cases of lameness, casting and purchase and in the examination for soundness before proceeding on service, and in short Transport animals proceeding on service would be thoroughly overhauled by the Veterinary Officers in whose charge they had been for some time past and would take the field still under his charge instead of shifting for themselves as has hitherto been the rule.

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Kohta	1	855
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Ferozepore	1	5	443
Jullundur	1	2	299
Campbellpur	1	...	357

*Statement showing number and distribution of Transport
Animals in India and Burma—(continued).*

Stations.	Mule Corps.	Mule Cadre	Pony Cadre.	Camel Corps.	Bullocks (half troop).	Total number of animals.	
NORTHERN COMMAND— <i>contd.</i>							
Shahpur	1	...	357	
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Lyalpur	4	...	1,428	
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WESTERN COMMAND.							
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Mhow ...	1	2	951	
Poona ...	1	1	903	
Karachi ...	1	1	3	1,202	
Ahmedabad	1	48	
Kamptee	3	144	
Deesa	2	96	
Jubbulpore ...	...	...	...	...	3	144	
Saugor ...	...	...	...	...	1	48	
Jhansi ...	...	...	...	...	2	96	
Nowgong ...	...	...	...	...	1	48	
Belgaum ...	...	...	...	...	1½	72	6,368
EASTERN COMMAND.							
Meerut ...	1	2	...	...	5	1,501	23,648
Bareilly ...	1	...	1	...	6	1,259	
Lucknow ...	...	1	...	...	5	443	
Muttra ...	...	...	...	...	2 sections	24	
Agra ...	...	...	...	...	4	192	

*Statement showing number and distribution of Transport
Animals in India and Burma—(concluded).*

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SECUNDERABAD DIVISION.							
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Thayetmyo	3	36	
Bhamo	2	24	
Rangoon	5	240	2,094
Total ...						32,599	

MARATHAS.

BY MAJOR R. M. BETHAM, 101ST GRENADIERS.

A hundred years ago the Marathas were proving themselves a thorn in the flesh to the English, and giving as much, if not more, trouble to subdue them as the Boers did lately in South Africa. At present, they are scarcely mentioned: if referred to, it is usually with more or less contempt. This probably arises from ignorance of their history, or to the fact that somehow they are confused with the so-called-Maratha-Brahman.

The object of this article is to dispel the misapprehension and not to raise a controversy.

To compare the various classes which go to make our splendid Indian Army, with one another, to me is odious. They have all fought nobly for us, and each, in their turn, has helped to win India for us and build up our vast Empire. As British subjects all respect is due to them and they should not suffer obloquy. The day may not be far off when we shall require the assistance of all. To belittle them is not only ungenerous but unwise.

The origin of the Marathas is still in considerable obscurity. Ethnologists have not yet determined whether they are Aryans, Scythians, aborigines or a mixture of the two former and the latter.

The banks of the Oxus are supposed to have been the cradle of humanity, the original birthplace of creeds and nations. This tract was the home of the Aryans, who, bursting their ancient bounds, issued in successive waves to people the earth. Some went north-west towards Europe, others south-east towards Persia and India. As they spread, they either drove the aborigines in front of them into mountains, hills or forests, or conquered them.

In these early days, each man had to attend to his own wants, but, as population increased, the Aryans, who migrated towards India, gradually, by a process of natural selection, resolved themselves into four great classes, *viz.*—(i) the Brahman or priestly caste, (ii) the Kshatriya or military caste, (iii) the Vaishya or trading caste, and (iv) the Sudra or servile caste.

At first, the lines dividing the above castes were not sharply defined, but in course of time, occupational distinctions developed into separate castes and hereditary employment.

While these evolutions were developing, the Aryans were gradually advancing towards India. Settling in the Punjab about 2,000 B.C., they gradually occupied Hindustan, that is the tract of country between the Himalayas and Vindhya.

The Brahmans, as a priestly tribe, held great power and, by degrees, elaborated a ritual. This led to a revulsion of feeling and to the rise of Buddhism, which threatened to extinguish Hinduism. The Brahmans however, not to be outdone, designed a code, known as

"The Code of Máu" and also as "The Dharma Shastras," which was nothing more or less than a compilation of the customary law current, among the Aryans, about the 5th Century B.C. But the Brahmans claimed a divine origin for it and ascribed it to "Máu," the first Aryan man. In it the four-fold division of caste is said to have been ordered by Brahma, the Creator of the Universe. The Brahmans are said to have emanated from his head, the Kshatriyas, from his arms, the Vaishiyas from his thighs, and the Sudras from his feet. The first three of these castes are said to be twice-born, while the Sudras, really aborigines, are excluded.

The Aryans appear to have had their wanderings checked for some considerable period by the Vindhya. In course of time, however, they crossed these and invaded Maharashtra. The derivation of this word is disputed. The country, south of the Vindhya is said to have been referred to, by settlers in Upper India, as "Maharashtra," that is, "the great country." Another theory is that it is "Mhar-rashtra," "the country of the Mhars," the latter being a large and important aboriginal class living in the Marathi-speaking country, but their depressed state makes it unlikely that the Marathas would adopt it. Again, chieftains of the name of Rattas governed Saundatti, in Belgaum District, in comparatively later times, while a tribe of that name has held political supremacy in the Dekhan from the remotest times. It is surmised that these called themselves "Maha-rattas" or "great Rattas," and that the country they lived in came to be called "Maha-rashtra."

Another point in dispute is whether they are Kshatriyas or Sudras? This is a most important one. The Marathi language is undoubtedly of Sanskrit origin, that being so, it must have been introduced by the Aryans: in which case, the people speaking it, could hardly be aborigines or Sudras. The other languages of Southern India, such as Tamil, Telugu, Kanarese, Malialam, etc., are Dravidian and totally different. The people employing them, I believe, are said to be of aboriginal descent.

There are two distinct classes of Marathas, both in the Konkan and Dekhan. Those in the former tract are divided into Raos and Naiks: the former consider themselves to be of better stock, but they both claim to be Kshatriyas and not Sudras.

In the Dekhan, the better class and well-to-do Marathas, claim to be Kshatriyas and of Rajput origin. They wear the sacred thread belong to the four great Vanshes or races, *viz.*, Surya, Som or Chandra Sesh and Yadu, forbid widow marriage, practice infant marriage, and consist of 96 clans. Those, however, who follow agricultural pursuits call themselves Kunbis and say they are Sudras. They are both, however, of the same stock; the distinction would only appear to be social. A Maratha will marry the daughter of a Kunbi but will not, ordinarily, give his daughter in marriage to one. Cases, however, have occurred of a Kunbi, who has prospered and risen in the social scale, obtaining the daughter of a Maratha in marriage by donning the sacred thread, calling himself Kshatriya and compensating his future

wife's people. Kunbi recruits invariably start life by styling themselves Sudras, but on joining a corps, they immediately call themselves Kshatriyas. There also exist, to the present day, indications of a classification by "kul-devaks" or "totems," which can scarcely be reconciled with a pure Rajput or even Aryan origin. Be their origin what it may, one cannot get away from the fact that they rose, from comparative insignificance, to be a great people, drove the Musalman invaders out of the Dekhan, broke the Moghal power, over-ran India and would have had an Emperor on the Imperial throne of Delhi had they not suffered defeat, at the hands of the Afghans, on the fatal field of Panipat in 1761. There is no question but that the Marathas take a very prominent part in everything of interest to Hindus, in the present day, and that all Hindus would rally round them.

Maharashthra or that tract of country inhabited by the Marathas and in which Marathi is the prevailing language, is bounded on the north by the Satpura Hills, as far east as the Weinganga river, which to its junction with the Warda river forms its eastern boundary, from thence a wavy line to Goa continues its eastern and gives its southern boundaries: on the west, it is bounded by the sea, as far north as Damaun, whence a line to the western extremities of the Satpura Range excludes that portion in which Guzerathi is the prevalent language.

Berar and the western portions of the Nizam's dominions are within Maharashthra.

That part of Maharashthra, situated within the limits of the Bombay Presidency, is divided, by more or less natural boundaries, into three divisions. These are (i) Konkan, (ii) Konkan-Ghat-Mahta and (iii) Dekhan.

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for a considerable portion of the year, consequently its inhabitants are known as Murhwallahs or "Dwellers in the mist." The Khoras are the valleys formed by the spurs of the Sahyadris, and derived from the word "Khor," which translates into "dingle" or "glen." The Konkan-Ghat-Mahta is entirely a hilly country, covered with jungle and low tangle, most difficult to move through. The views from it are magnificent especially just after the south-west monsoon, when the air is clear and still and the rivers, streams and rivulets full and waterfalls and cascades are to be seen on every hand.

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Maluji Bhonsle was a man possessed of considerable ability, industry and perseverance. He was determined to prosper and, with this end in view, he was anxious to contract a marriage between Shahji and the daughter of Lukhji Jadhao Rao, which was not pleasing to the latter, as Maluji was not considered of sufficient rank. The latter, having become possessed of considerable wealth, which it is said the goddess Bhavani assisted him to, employed it in the purchase of horses and in public and charitable works. His brother-in-law, Nimbalkar of Phaltan, espoused his cause and, by his help, Maluji was raised to the command of 5,000 horse, with the title of Maluji Raja Bhonsle. The forts of Shivner and Chakan, with their dependent districts, were placed in his charge and the parganahs of Poona and Supa made over to him in Jagir. Every obstacle being thus removed the marriage of Shahji, with Jiji Bhai, daughter of Lukhji Jadhao Rao, was celebrated with great pomp in 1604.

By Jiji Bhai, Shahji had two sons, Sambhaji and Shivaji. The elder was his father's favourite and accompanied him from early infancy, but the younger remained with his mother. Shivaji was

The Executive Veterinary Officers would tour throughout their Commands inspecting all corps and cadres and lecture periodically to these various corps on Veterinary matters *especially* in regard to contagious diseases. They would report at once to the senior Veterinary Officer any outbreak of contagious disease and the steps taken to prevent its spreading.

During their tour they would arrange to spend some time in each station assisting with their advice in regard to animals proposed to be purchased or cast, would advise in regard to dietetics and hygiene, would inspect the shoeing and see that this was properly carried out, would lecture on the anatomical principles on which saddle-fitting is based and the means adopted to keep animals at work on service with sore backs, would examine the Veterinary Assistants for promotion and see that they were up to their work at all times, would examine all animals detailed for service both as regards their soundness and their freedom from contagious disease, and would *upon service with their own Transport*.

To see how such a scheme would work out in practice let us take for the moment the Northern Command containing 17,280 Transport animals on a peace footing (a statement on pp. 81-83).

Under the scheme two Veterinary Officers are allotted to the Northern Command and one Veterinary Officer is specially detailed to study the diseases of camels.*

The officer detailed to study camel diseases would take charge of the following stations—Lyallpur, Multan, Montgomery, Shahpur and Campbellpur which has head-quarters at Lyallpur where there are four Camel Corps. This would give 12 stations in the Command with 12,000 animals other than camels for division between the two Veterinary Officers of the Command. One of these would take Rawalpindi as his head-quarters where there are 3,200 animals and the other Unwana where there are 2,500 and divide the 12 stations between them on 6 stations each with about 6,400 animals apiece. Giving one month to each station they visited they would complete their tours in six months when they would begin again. From this it will be seen that the single officer has on an average 1,600 animals under his charge he would be able to devote quite a large proportion of time to each unit. It would not be a case of inspection one day and nothing on the next but an appreciable period would be spent with each Corps during which time they would get thoroughly into the Veterinary matters connected with the Corps. At their respective head-quarters they would arrange for the thorough instruction of Native Ismailis among whom they would be detailed to the mounts. We would not expect that the Veterinary Officers below the command level would be called upon to be directly

* It is not intended to suggest that the Veterinary Officer detailed to study camel diseases would be the only one to be detailed to the camels.

At the present time the Veterinary Officer detailed to the camels is also detailed to the horses and mules and is therefore not available for the study of camel diseases.

they would nevertheless be in thorough working touch, not only with the Transport animals, but with Salootris, a matter of great importance when proceeding on active service.

The result of such supervision would undoubtedly add to the efficiency of the Corps in many ways. The Salootris would be kept up to their work, the expenditure of medicines would be controlled, the general health of the animals improved by attention to dietetics and hygiene, the shoeing would be improved, expert advice would be available in cases of lameness, casting and purchase and in the examination for soundness before proceeding on service, and in short Transport animals proceeding on service would be thoroughly overhauled by the Veterinary Officers in whose charge they had been for some time past and would take the field still under his charge instead of shifting for themselves as has hitherto been the rule.

Statement showing number and distribution of Transport Animals in India and Burma.

[Compiled from the Indian Quarterly Army List of April 1906.]

Stations.	Mule Corps.	Mule Cadre.	Pony Cadre.	Camel Corps.	Bullocks (half troop).	Total number of animals.
NORTHERN COMMAND.						
Peshawar	2	1	...	...	2	2,009
Nowshera	1	...	...	...	1	903
Rawalpindi	2	4	...	1	8	3,263
Umballa	2	2	1	...	6	2,520
Hasan Abdal	1	...	...	...	...	855
Sialkote	1	...	...	...	1	903
Kohta	1	...	...	...	...	855
Jhelum ... ..	...	1	...	1	...	560
Ferozepore ... ..	...	1	...	...	5	443
Jullundur ... ..	...	1	...	...	2	299
Campbellpur ... ..	...	...	...	1	...	357

*Statement showing number and distribution of Transport
Animals in India and Burma—(continued).*

Stations.	Mule Corps.	Mule Cadre	Pony Cadre.	Camel Corps.	Bullocks (half troop).	Total number of animals.	
NORTHERN COMMAND— <i>contd.</i>							
Shahpur ...	...	...	...	1	...	357	
Montgomery ...	...	...	...	2	...	714	
Multan ...	...	...	...	1	2	453	
Mian Mir ...	...	4	...	1	...	1,169	
Lyallpur ...	...	...	...	4	...	1,428	
Lahore ...	...	...	..	..	4	192	17,280
WESTERN COMMAND.							
Quetta ...	2	...	...	2	4	2,616	
Mhow ...	1	...	...	..	2	951	
Poona ...	1	...	...	...	1	903	
Karachi ...	1	1	...	...	3	1,202	
Ahmedabad ...	...	...	...	...	1	48	
Kamptee ...	...	...	...	...	3	144	
Deesa ...	...	...	...	...	2	96	
Jubbulpore ...	...	...	...	...	3	144	
Saugor ...	...	...	...	...	1	48	
Jhansi ...	...	...	...	..	2	96	
Nowgong ...	...	...	...	...	1	48	
Belgaum ...	...	...	...	..	1½	72	6,368
EASTERN COMMAND.							
Meerut ...	1	2	...	...	5	1,501	23,648
Bareilly ...	1	...	1	...	6	1,259	
Lucknow ...	...	1	...	...	5	443	
Muttra ...	...	..	...	...	2 sections	24	
Agra ...	...	...	...	...	4	192	

Statement showing number and distribution of Transport Animals in India and Burma—(concluded).

Stations	Mule Corps.	Mule Cadre.	Pony Cadre.	Camel Corps	Bullocks (half troops)	Total number of animals.	
EASTERN COMMAND— <i>contd.</i>							
Delhi	2 sections	24	
Saharanpur	2	96	
Roorki	1	48	
Fyzabad	1	48	
Allahabad	7	336	
Cawnpore	2	96	
Dinapore	1	48	
Calcutta	7	336	4,461
SECUNDERABAD DIVISION.							
Bangalore ...	1	...	...	...	3	999	
Secunderabad ...	1	...	...	...	4	1,047	
Bellary	1½	72	
Madras	4	192	
Wellington	1	48	
Cannanore	1	48	2,406
BURMA DIVISION.							
Mandalay ...	1	...	...	...	1	903	
Meiktila ...	1	...	...	...	2 sections	879	
Shwebo	1	12	
Thayetmyo	3	36	
Bhamo	2	24	
Rangoon	5	240	2,094
Total ...						32,599	

MARATHAS.

BY MAJOR R. M. BETHAM, 101ST GRENADIERS.

A hundred years ago the Marathas were proving themselves a thorn in the flesh to the English, and giving as much, if not more, trouble to subdue them as the Boers did lately in South Africa. At present, they are scarcely mentioned: if referred to, it is usually with more or less contempt. This probably arises from ignorance of their history, or to the fact that somehow they are confused with the so-called-Maratha-Brahman.

The object of this article is to dispel the misapprehension and not to raise a controversy.

To compare the various classes which go to make our splendid Indian Army, with one another, to me is odious. They have all fought nobly for us, and each, in their turn, has helped to win India for us and build up our vast Empire. As British subjects all respect is due to them and they should not suffer obloquy. The day may not be far off when we shall require the assistance of all. To belittle them is not only ungenerous but unwise.

The origin of the Marathas is still in considerable obscurity. Ethnologists have not yet determined whether they are Aryans, Scythians, aborigines or a mixture of the two former and the latter.

The banks of the Oxus are supposed to have been the cradle of humanity, the original birthplace of creeds and nations. This tract was the home of the Aryans, who, bursting their ancient bounds, issued in successive waves to people the earth. Some went north-west towards Europe, others south-east towards Persia and India. As they spread, they either drove the aborigines in front of them into mountains, hills or forests, or conquered them.

In these early days, each man had to attend to his own wants, but, as population increased, the Aryans, who migrated towards India, gradually, by a process of natural selection, resolved themselves into four great classes, *viz.*—(i) the Brahman or priestly caste, (ii) the Kshatriya or military caste, (iii) the Vaishya or trading caste, and (iv) the Sudra or servile caste.

At first, the lines dividing the above castes were not sharply defined, but in course of time, occupational distinctions developed into separate castes and hereditary employment.

While these evolutions were developing, the Aryans were gradually advancing towards India. Settling in the Punjab about 2,000 B.C., they gradually occupied Hindustan, that is the tract of country between the Himalayas and Vindhya.

The Brahmans, as a priestly tribe, held great power and, by degrees, elaborated a ritual. This led to a revulsion of feeling and to the rise of Buddhism, which threatened to extinguish Hinduism. The Brahmans however, not to be outdone, designed a code, known as

"The Code of Mánu" and also as "The Dharma Shastras," which was nothing more or less than a compilation of the customary law current, among the Aryans, about the 5th Century B.C. But the Brahmans claimed a divine origin for it and ascribed it to "Mánu," the first Aryan man. In it the four-fold division of caste is said to have been ordered by Brahma, the Creator of the Universe. The Brahmans are said to have emanated from his head, the Kshatriyas, from his arms, the Vaishiyas from his thighs, and the Sudras from his feet. The first three of these castes are said to be twice-born, while the Sudras, really aborigines, are excluded.

The Aryans appear to have had their wanderings checked for some considerable period by the Vindhya. In course of time, however, they crossed these and invaded Maharashtra. The derivation of this word is disputed. The country, south of the Vindhya is said to have been referred to, by settlers in Upper India, as "Maharashthra," that is, "the great country." Another theory is that it is "Mhar-rashthra," "the country of the Mhars," the latter being a large and important aboriginal class living in the Marathi-speaking country, but their depressed state makes it unlikely that the Marathas would adopt it. Again, chieftains of the name of Rattas governed Saundatti, in Belgaum District, in comparatively later times, while a tribe of that name has held political supremacy in the Dekhan from the remotest times. It is surmised that these called themselves "Maha-rattas" or "great Rattas," and that the country they lived in came to be called "Maha-rashthra."

Another point in dispute is whether they are Kshatriyas or Sudras? This is a most important one. The Marathi language is undoubtedly of Sanskrit origin, that being so, it must have been introduced by the Aryans: in which case, the people speaking it, could hardly be aborigines or Sudras. The other languages of Southern India, such as Tamil, Telugu, Kanarese, Malialam, etc., are Dravidian and totally different. The people employing them, I believe, are said to be of aboriginal descent.

There are two distinct classes of Marathas, both in the Konkan and Dekhan. Those in the former tract are divided into Raos and Naiks: the former consider themselves to be of better stock, but they both claim to be Kshatriyas and not Sudras.

In the Dekhan, the better class and well-to-do Marathas, claim to be Kshatriyas and of Rajput origin. They wear the sacred thread belong to the four great Vanshes or races, *viz.*, Surya, Som or Chandra Sesh and Yadu, forbid widow marriage, practice infant marriage, and consist of 96 clans. Those, however, who follow agricultural pursuits call themselves Kunbis and say they are Sudras. They are both, however, of the same stock; the distinction would only appear to be social. A Maratha will marry the daughter of a Kunbi but will not, ordinarily, give his daughter in marriage to one. Cases, however, have occurred of a Kunbi, who has prospered and risen in the social scale, obtaining the daughter of a Maratha in marriage by donning the sacred thread, calling himself Kshatriya and compensating his future

wife's people. Kunbi recruits invariably start life by styling themselves Sudras, but on joining a corps, they immediately call themselves Kshatriyas. There also exist, to the present day, indications of a classification by "kul-devaks" or "totems," which can scarcely be reconciled with a pure Rajput or even Aryan origin. Be their origin what it may, one cannot get away from the fact that they rose, from comparative insignificance, to be a great people, drove the Musalman invaders out of the Dekhan, broke the Moghal power, over-ran India and would have had an Emperor on the Imperial throne of Delhi had they not suffered defeat, at the hands of the Afghans, on the fatal field of Panipat in 1761. There is no question but that the Marathas take a very prominent part in everything of interest to Hindus, in the present day, and that all Hindus would rally round them.

Maharashthra or that tract of country inhabited by the Marathas and in which Marathi is the prevailing language, is bounded on the north by the Satpura Hills, as far east as the Weinganga river, which to its junction with the Warda river forms its eastern boundary, from thence a wavy line to Goa continues its eastern and gives its southern boundaries: on the west, it is bounded by the sea, as far north as Damaun, whence a line to the western extremities of the Satpura Range excludes that portion in which Guzerathi is the prevalent language.

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born in Shivner Fort near Junnar, in the north of Poona, in May 1627. During the turbulent period in which his childhood was passed, he narrowly escaped, on several occasions, from falling into the hands of the Muhammadans.

Owing to an estrangement between Shahji and Jiji Bhai, Shivaji did not see much of his father during his early childhood. To Dadaji Konedeo, an astute Brahman, Shahji left the care of his family at Poona. In those days Marathas could seldom read or write, as they considered it undignified. Shivaji could never write his name. He was a good archer and marksman, skilled in the use of the spear and the various swords and daggers common in the Dekhan. His countrymen have ever been celebrated for horsemanship, in this he excelled. He was fully instructed in all the ceremonies and observances enjoined by the rules of his caste. The fabulous exploits detailed in the Mahabharat, the Ramayan and the Bhagwat were his delight.

The religious and natural feelings of a Hindu were strongly implanted in Shivaji, and he early imbibed a rooted hatred of the Muhammadans. It must be remembered that, at this time, the Dekhan was held by the various Muhammadan dynasties and that the Marathas had little or nothing to say in the government of their own country. This would naturally increase their hate of the Musalmans.

From about his sixteenth year he began to associate with persons of lawless habits and to talk of becoming an independent polygar. To endeavour to wean him from these tastes, Dadaji Konedeo confided the affairs of the Jagir to him. He thus came in contact with the leading Marathas, near Poona, whose goodwill he obtained by his obliging and conciliatory manner. Even then, it was whispered that he was a sharer in the gang robberies committed in the Konkan.

During his visits to the Konkan and Ghat Mahta, he grew familiar with the paths and defiles of that wild tract, a knowledge he made use of later. He also came much into contact with the Mawalis, to whom he was always partial. In spite of their stupid appearance, he observed they were active and intelligent in anything to which they were accustomed and faithful in situations of trust. His most trusted follower, Tanaji Malosre, was one of these.

Shivaji noted the value of the various hill forts and in due time took advantage of them. His first exploit was the capture of Torna, a hill fort some 20 miles west of Poona, in 1648, by the collusion of the Killidar. This was a possession of Bijapur, in whose service his father was entertained. Shivaji informed Bijapur, but took care to improve the defences of the fort. While so employed, hidden treasure was discovered, with which arms and ammunition were purchased and the fort of Rujgarh, three miles south-west of Torna, built. On this coming to the ears of Bijapur, suspicion fell on Shahji, who, however, was blameless. He took the precaution to write to Dadaji Konedeo and asked him to request Shivaji

to desist. Shortly after this, Konedeo died. Prior to his death, he sent for Shivaji and advised him to prosecute his plans for independence; to protect Brahmans, kine and cultivators; to preserve Hindu temples from violation; and to follow the fortune which lay before him.

Dadaji's death was reported to Shahji, but when requests were made for arrears of revenue, evasive replies were sent by Shivaji.

Shortly after this, he acquired Supa by surrounding it with his Mawalis, and also the forts of Singarh and Purandhar. In this manner he was soon in possession of the tract between Chakan and the Nira. He continued to arm and collect his Mawalis and, in 1648, he attacked and looted a large convoy of treasure en route from Kalyan to Bijapur. This completely unmasked his designs, but before the news reached Bijapur, he had obtained possession of several more forts. These acts led to suspicion being cast on Shahji, in consequence of which he was made a prisoner. During his incarceration, Shivaji remained quiet. By appealing to the Moghals, Shivaji obtained Shahji's release, and a mansub of 5,000 horse for himself.

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With a view to helping him to extend his possessions in the Konkan and Ghat-Mahta, Shivaji built Pratapgarh upon a high rock near the source of the Krishna. Up to this time he had confined his ravages to Bijapur, but becoming daring by impunity and invited by circumstances, he extended his depredations to the Imperial Districts and, in 1657, raided Junnar.

In 1659, the Bijapur Government became sensible of the necessity of making an effort to subdue him. Accordingly a force of 5,000 horse and 7,000 choice infantry, with a train of artillery, was despatched against him under one Afzul Khan, who pompously declared that he would bring back the insignificant rebel and cast him in chains under the footstool of the throne.

Shivaji was not going to be drawn. On the arrival of this force at Wai, he withdrew to Pratapgarh, below which he cut down the jungle. He communicated his plans to the faithful Tanaji Malosre and ordered up his troops from the Konkan mostly Mawali infantry. He sent word to Afzul Khan that he would surrender the whole country to him, if by so doing he could assure himself of his friendship.

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In March 1666, Shivaji proceeded to Delhi; taking umbrage at the manner of his reception, he showed resentment, on which he was practically made a prisoner. He, however, managed to escape and, after extraordinary adventures, returned to the Dekhan. He was not long in repossessing himself of the forts and districts, he had been called upon to cede, prior to proceeding to Delhi.

The years 1668-69 were those of his greatest leisure. These he devoted to affairs of State.

A short description of his military arrangements will now be given, as they are replete with interest.

The foundation of his power was his infantry. His occupation of the hill forts give him a hold on the country and a place of deposit for his plunder. His cavalry had not yet spread the terror of the Maratha name. The infantry was raised in Ghat-Mahta and the Konkan those of the former were called Mawalis, those of the latter Hedkaris. The word "hed" literally means "down the coast"; the term applied originally, it is believed, to men drawn from the neighbourhood of Malwan, but later to all infantry from the Konkan. These men brought their own arms, for which Government supplied ammunition. Their dress was a pair of short drawers, reaching half-way down the thigh, a strong narrow band tightly girt about the loins, a turban and sometimes a cotton frock. Some wore a cloth round the waist, which could be used as a shawl.

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for a considerable portion of the year, consequently its inhabitants are known as *Murwaddis* or "Dwellers in the mist." The *Khoras* are the valleys formed by the spurs of the *Sahyadris*, and derived from the word "*Khor*," which translates into "dingle" or "glen." The *Konkan-Ghat Mahta* is entirely a hilly country covered with jungle and low tangle, most difficult to move through. The views from it are magnificent especially just after the south west monsoon, when the air is clear and still and the rivers, streams and rivulets full and waterfalls and cascades are to be seen on every hand.

The Dekhan, officially commences on the crest of the *Sahyadris*, and includes *Konkan Ghat Mahta*, but, from a recurring point of view, it starts where *Konkan Ghat Mahta* ends on the eastern side of the Ghats. Recruits from this area would be called *Konkanis* and passed to *Konkan Companies*. The Dekhan consists of rolling plains, with little or nothing to relieve the monotony except low hills and a few green patches of cultivation near villages, rivers and irrigation. It is uninteresting from a scenic point of view, in contradistinction to the *Konkan* and *Ghat Mahta*, which are possessors of beautiful scenery and landscapes.

There is one marked feature in the scenery of *Maharashtra* and that is flat topped hills either rising abruptly out of the plain or terminating a spur. As these hills reach their summits they are crowned with steep perpendicular sides, culminating in a level top. These in themselves were difficult enough to ascend, the *Marathas* took advantage of them by transforming them into forts. This was effected by building walls in such places as were necessary, and generally strengthening and improving other weak spots, the result being that these fastnesses became well nigh impregnable. When they fell it was usually the result of treachery. In many springs the finest water existed, and to complete their impregnability, secret subterranean passages were constructed. After their marauding expeditions, the *Marathas* returned to these impregnable confidence knowing full well that the *Muslimans* would not dare to commit themselves to the intricacies and dangers of the Western Ghats. It was from these forts that *Shivaji* carried the title of "The Mountain King." Some of the most remarkable are *Daulatabad*, *Satara*, *Torna*, *Rajgarh*, *Rajgarh*, *Pratargarh*, *Singurh*, *Parmanur* and *Pandhla*. In addition to these *Shivaji* built forts on the coast for the defence of his people and his fleet. These are *Mulwanur*, *Sinddurg*, *Gevra*, *Savarnburg* and *Achalgiri*. These are now more or less ruins.

The first *Muslim* invasions of the Dekhan took place about 1200 A.D. when *Acharya* and *Yakub* of the *Khalji* dynasty took *Daulatabad* and other *Daulatabad* in possession of the *Dhargu* *Yakub*. Apparently at least it was several times before passing the valley into possession of the *Muslim* invaders. The *Marathas* at this period did not remember king with, they were either on the starting point of the *Marathas* who gradually conquered their country, settled and began to administer it. In

the course of time, Muhammadan kingdoms rose in the Dekhan, governed by viceroys but owing allegiance to Delhi. As these gained strength, they became more or less independent, and warred not only amongst themselves, but combined together against Delhi. These kingdoms were the Adil Shahi or Bijapur, the Kutub Shahi, Golconda or Hyderabad, Imad Shahi or Berar, Nizam Shahi or Ahmednagar and Burid Shahi or Ahmedabad Bidar.

War cannot be made without armies, and to maintain these Marathas were enlisted.

About this time, end of sixteenth century, the Portuguese, Dutch, French and English came on the scenes of Western India. They were not of much account at the start, but later on required dealing with.

The first Marathas to bring themselves to notice were the Bhonsle family, in the sixteenth century. They held several patelships under the Ahmednagar government. Their principal residence was at the village of Ellora, near the celebrated caves of that name and the fortress of Daulatabad, in the Nizam's territory. Babji Bhonsle, who was apparently a man of some note, had two sons, Maluji and Vituji. The former married Dipa Bhai, a sister of Jagpal Rao Naik Nimbalkar, Deshmukh of Phaltan, a man of good birth and position. Through the influence of one Lukhji Jadhao Rao, Maluji was entertained in the service of Mortijah Nizam Shah in 1577. For many years he was childless, a great misfortune among Hindus. He invoked the aid of all the Hindu gods, but to no purpose. He then sought the assistance of one Shah Sharif, a celebrated Muhammadan saint of Ahmednagar, whom he engaged to offer up prayers on his behalf. Shortly after, a son was born to him. In gratitude to the Pir, for his supposed benediction, the child was named Shah after him, with the Maratha adjunct of respect "Ji": in the ensuing year, a second son was, in like manner, named Sharifji.

Maluji Bhonsle was a man possessed of considerable ability, industry and perseverance. He was determined to prosper and, with this end in view, he was anxious to contract a marriage between Shahji and the daughter of Lukhji Jadhao Rao, which was not pleasing to the latter, as Maluji was not considered of sufficient rank. The latter, having become possessed of considerable wealth, which it is said the goddess Bhavani assisted him to, employed it in the purchase of horses and in public and charitable works. His brother-in-law, Nimbalkar of Phaltan, espoused his cause and, by his help, Maluji was raised to the command of 5,000 horse, with the title of Maluji Raja Bhonsle. The forts of Shivner and Chakan, with their dependent districts, were placed in his charge and the parganahs of Poona and Supa made over to him in Jagir. Every obstacle being thus removed the marriage of Shahji, with Jiji Bhai, daughter of Lukhji Jadhao Rao, was celebrated with great pomp in 1604.

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The first Musalman invasion of the Dekhan took place about 1293 A. D., when Alla-ud-din, a nephew of the kings of the Khilji dynasty, took Deogarh, the modern Daulatabad, then in possession of the Deogiri Yadhaos. Apparently it changed hands several times, before passing finally into the possession of the Musalman invaders. The Marathas, at this period, did not require much reckoning with; they made little or no stand against the foreigners, who gradually conquered their country, settled in and began to administer it. In

the course of time, Muhammadan kingdoms rose in the Dekhan, governed by viceroys but owing allegiance to Delhi. As these gained strength, they became more or less independent, and warred not only amongst themselves, but combined together against Delhi. These kingdoms were the Adil Shahi or Bijapur, the Kutub Shahi, Golconda or Hyderabad, Imad Shahi or Berar, Nizam Shahi or Ahmednagar and Burid Shahi or Ahmedabad Bidar.

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born in Shivner Fort near Junnar, in the north of Poona, in May 1627. During the turbulent period in which his childhood was passed, he narrowly escaped, on several occasions, from falling into the hands of the Muhammadans.

Owing to an estrangement between Shahji and Jiji Bhai, Shivaji did not see much of his father during his early childhood. To Dadaji Konedee, an astute Brahman, Shahji left the care of his family at Poona. In those days Marathas could seldom read or write, as they considered it undignified. Shivaji could never write his name. He was a good archer and marksman, skilled in the use of the spear and the various swords and daggers common in the Dekhan. His countrymen have ever been celebrated for horsemanship, in this he excelled. He was fully instructed in all the ceremonies and observances enjoined by the rules of his caste. The fabulous exploits detailed in the Mahabharat, the Ramayan and the Bhagwat were his delight.

The religious and natural feelings of a Hindu were strongly implanted in Shivaji, and he early imbibed a rooted hatred of the Muhammadans. It must be remembered that, at this time, the Dekhan was held by the various Muhammadan dynasties and that the Marathas had little or nothing to say in the government of their own country. This would naturally increase their hate of the Musalmans.

From about his sixteenth year he began to associate with persons of lawless habits and to talk of becoming an independent polygar. To endeavour to wean him from these tastes, Dadaji Konedee confided the affairs of the Jagir to him. He thus came in contact with the leading Marathas, near Poona, whose goodwill he obtained by his obliging and conciliatory manner. Even then, it was whispered that he was a sharer in the gang robberies committed in the Konkan.

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In spite of his contempt for Shivaji and the Marathas, Afzul Khan was aware of the intricate nature of the country between Wai and Pratapgarh, he therefore did not wish to commit his whole force to it. Instead, he sent one Pantoji Gopinath, a Brahman, to interview Shivaji, a fatal mistake of which the latter was not slow to avail himself. During the interview he unfolded to Pantoji his dreams of founding a Hindu nation; that he was called upon by Bhaváni to protect Brahmans and kine, to punish the violaters of their temples and gods, and to resist the enemies of their religion; that it became him as a Brahman to assist in what was already decreed by the deity; and that here, amongst his caste and countrymen, he should hereafter live in comfort and affluence. Pantoji was completely won over, and it was arranged that Afzul Khan should be invited to have an interview with Shivaji.

Everything being arranged, Afzul Khan, clad, in a thin muslin garment, and armed with a sword, accompanied by some 1,500 men, advanced to within a few hundred yards of Partapgarh, where he halted. He then proceeded to meet Shivaji, taking Sayyid Bundu with him.

Shivaji made preparations as if resolved on some meritorious, though desperate action. He performed his ablutions and besought his mother's blessing. He then put on his steel chain cap and armour under his turban and cotton gown, concealed a crooked dagger, bichwa or scorpion, in his right sleeve, and, on the fingers of his left hand, he fixed a waghnaikh, or tiger's claws. Thus accoutred, with his tried friend Tanaji Malosre, he set out to meet Afzul Khan.

The two met, were introduced and, in the midst of the customary embraces, Shivaji disembowelled Afzul Khan with the waghnaikh, following the blow up with the dagger. Afzul drew his sword, but to no avail, against Shivaji. Sayyid Bundu made a gallant effort, but against two such swordsmen as Shivaji and Tanaji Malosre, he had no chance. Afzul's head was severed and carried in triumph to Pratapgarh. On the recognised signal, the Mawalis fell on and completed the rout of the Bijapur troops.

This act, detestable as it appears in the light of the present day, greatly raised Shivaji's reputation, and from this date the Marathas may be said to have sprung into being as a nation. I have no wish to defend the murder of Afzul Khan, but, in all fairness to the Marathas, it must be remembered that among uncivilised people, such as they were then and such as the wild tribes on our frontier now are, necessity is often considered to justify murder. Outrages constantly occur on our borders, yet from these we do not impute want of a fighting spirit to the frontier tribes. In dealing with the undoubted assassination of Afzul Khan, these points should receive due consideration, as his murder was deemed justified.

Muhammadian rule in the Dekhan rested on very insecure ground. There were no interests in common. On the one hand was the Emperor, on the other the kingdoms of the Dekhan. Each of these

encouraged the Maratha chieftains under their banner, which brought Shivaji into prominence as a champion of Hindu faith and empire, a power which should finally drive out of the Dekhan its Musalman rulers. They were so blind to the doings of the Marathas that they actually encouraged them to fight against their own nationality. When they discovered their error, it was too late. The only Musalman, who appeared to grasp the idea of fusing India into one nation, was Akbar, who did his best to blend the interests of Hindus and Musalmans into one.

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possessed an extraordinary facility for climbing precipices and scaling rocks.

To every ten men there was a naik, and to every fifty a havaldar. The commander of one hundred was termed jumladar, and of a thousand ek-hazari. There were also officers of five thousands, between whom and the surnobat, or chief commander, there were no mediums.

The cavalry was of two kinds, *viz.*, Barghirs and Shilahdars. The Barghirs were mounted on horses, the property of the State, and were known as Pagah; in these Shivaji placed great trust and reliance. The Shilahdars brought their own horses. The resemblance of this system to that now prevalent in our Indian cavalry is very noticeable. Possibly it may have been adopted from the Marathas.

The Maratha horsemen wore a pair of tight breeches covering the knee, a turban which many fastened by passing a fold under the chin, a frock of quilted cotton, and a cloth round the waist, with which they generally girt on their swords, in preference to securing them with their belts.

The horseman was armed with a sword and shield; a proportion carried matchlocks. The great national weapon was the spear, in the use of which, and the management of their horses, they evinced both grace and dexterity.

Over every seventy-five horsemen, there was a havaldar. To one hundred and seventy-five, a jumladar, and to every five jumlas or 625, a subhedar. Every subhe had an accountant and auditor of accounts, invariably Brahmans.

To the command of every ten subhes, rated at 5,000, there was a commander styled panch-hazari. Every jumla, subhe and panch-hazari had an establishment of news writers, avowed spies and secret intelligencers.

Shivaji took an immense amount of interest in his retainers and, in the early part of his career, inspected all men offering themselves for entertainment, personally.

Mawalis enlisted merely on condition of getting a subsistence in grain. Infantry received from Rs. 3 to 9 per mensem, Barghirs Rs. 6 to 15 and Shilahdars Rs. 18 to 36. Plunder was the property of the State.

As regards hill forts, each was in charge of a killidar or havaldar under whom there were one or more surnobats, each in command of a force; these must not, however, be confounded with a chief commander of cavalry or infantry. Every fort had a head clerk and a supply officer. Orders in respect to ingress and egress, rounds, watches and patrols, care of water, grain, stores and ammunition were most minute. The garrison consisted of infantry but, independent of them, each had a separate and complete establishment of Brahmans, Marathas, Ramoshis, Mhars and Mangs, the whole termed Garkharis. The Ramoshis, Mhars and Mangs were employed on outpost duty: they brought intelligence, watched

all paths, misled enquirers or cut off the enemy's stragglers. They described the fort as their "mother."

Shivaji's civil administration was equally good. On it he expended much care and forethought. No branch of it escaped his attention, either religious, revenue or judicial.

The standard of Shivaji, the national flag of the Marathas, was called the Bhagwa Jhenda. It was swallow-tailed, of a deep orange colour, and particularly emblematic of the followers of Mahadeo.

After a spell of peace, Shivaji once more resumed activity. His first steps were the recovery of Singarh and Purandhar. An account of the taking of the former will be given here, as it shows the daring possessed by the Marathas at that time, a spirit still latent in them.

Singarh is situated on the eastern side of the great Sahyadri range, near the point where the Purandhar Hills branch off into the Dekhan. It communicates with these hills, both on the east and west by high narrow ridges, while on the north and south, it presents a high and rugged mountain, with an ascent of half a mile, in many parts, nearly perpendicular. On arriving at this height, there is an immense craggy precipice, some 40 feet high, while surmounting the whole, there is a strong stone wall with towers. This was occupied by Rajputs, who, fancying it impregnable, were correspondingly negligent. Shivaji laid a plan for surprising it, confiding it to the faithful Tanaji Malosre, who offered to take it accompanied by his brother Suryaji and 1,000 Mawalis. This party set out on a dark February night, from Raigarh by different paths, known only to themselves and uniting below the fortress, directed by Malosre. The men were divided into two parts, one remaining behind, with orders to advance, if necessary, while the rest lodged themselves unseen at the foot of the rock. Selecting a part most difficult of access, one man mounted the rock, made fast a ladder, by which the remainder followed, lying down as they arrived. Three hundred had scarce obtained a footing, when the garrison became alarmed. One man advanced to discover what was occurring. A deadly arrow answered his enquiries. The noise of running to arms caused Tanaji to push forward without delay. A desperate conflict ensued. The Mawalis though outnumbered were gaining ground, when Tanaji fell. They then lost confidence, when Suryaji rallied them by saying the ropes were destroyed and now was the time to prove themselves Shivaji's Mawalis. Thus encouraged they returned with a resolution nothing could withstand, and with their usual war cry "Har! Har! Mahadeo!" they soon became masters of the fort, with a loss of some 300 to themselves and 500 Rajputs. On receiving the intimation of the success, Shivaji exclaimed:—"The den is taken but the lion is slain! We have gained a fort, but alas! I have lost Tanaji Malosre."

In June 1674, Shivaji was enthroned at Raigarh after many solemn rites and every observance of the Shastras, which could make the ceremony revered by Hindus. He assumed many lofty

titles and, thereafter, on all public occasions, he imitated the grandeur and dignity of royalty.

The remaining years of his life were spent in raiding Moghal territory, war with the Sidi and the consolidation of the Maratha power. He died at Raigarh, on the 5th April 1680, in his 53rd year. The immediate cause of his death being a painful swelling in his knee-joint, causing high fever, to which he succumbed.

At the time of his death, he had large possessions both of wealth and territory.

Shivaji was undoubtedly a wonderful man. If he had not altogether realised the dreams of his mother, or literally fulfilled the bidding of Bhawani, he had risen from a small landholder to be the monarch of a mighty nation, which he had called into being. His followers had been taught how they were to subdue the Moghals finally. Should fortune not smile, they were to return to their forts, baffling their pursuers. When opportunity offered they were to rush like a whirlwind on to the plains. So when the hand that framed the plans was dust and ashes, the design could be accomplished. Shivaji was a born leader of men. All can recognise his wonderful genius and admire his undaunted perseverance, but the world can hardly endorse the verdict of his nation, who speak of him as an incarnation of the deity, setting an example of wisdom, fortitude and piety.

Sambhaji succeeded Shivaji; though possessed of his courage, he lacked discretion, with the result that the whole country was in a state of anarchy. By executing the Peshwa, he estranged himself from the Marathas.

Aurangzebe determined to reduce the Marathas and the Muhammadan kingdoms of Bijapur and Golconda in one final effort. He left Delhi, to which he never returned, when 63 years of age, for this purpose, spending the remaining 27 years of his life on the march in a hopeless struggle to bring the Dekhan under control. So bent was he on its conquest that he paid scant heed to the doings of the English merchants, into whose hands his Empire was eventually to fall.

Aurangzebe took up his position at Ahmednagar in 1683. His camp was inconceivably luxurious and magnificent, in marked contrast to his own simple ways. This unnecessary display hindered the movement of his army. His main idea was, in the first place, to subjugate the Muhammadan States. Against the turbulent Marathas, he neglected the most ordinary precautions, owing to his senseless contempt of them, of which they took every advantage.

With this end in view, he besieged Bijapur which, after a brave defence, fell in 1686. So ended the brilliant Adil Shahi Dynasty. Golconda fell within a year. Thus the last of the dynasties that had risen on the ruins of the Bahmani kingdom came to an end.

To destroy two kingdoms, for Aurangzeb, was quite a different matter to building up his own power. Rebellions sprang up

in every direction. Had Sambhaji possessed his father's genius, he might have swept the Moghal forces away, but he spent his time in debauchery. In fact, the Maratha power appeared to be coming to an end. This was not so. Though the form was changing the power still grew. Their military organisation might lessen, yet their predatory habits, their pride in Shivaji's memory, their belief in the impregnability of their forts was as strong as ever. Their strength absolutely increased as Shivaji's system crumbled. Guerilla warfare arose and was carried on on the Moghal hosts, from every quarter, a warfare in which their unwieldy army was of little avail.

In 1689, Sambhaji fell a prisoner into Aurangzebe's hands. He was offered life on the condition of embracing Islam. To this he gave a grossly insulting reply, on which he was executed, after suffering terrible torture. Though the Marathas were estranged from Sambhaji, they were infuriated at this cruel outrage on the son of their great leader.

Rajaram, Sambhaji's half brother, was declared regent on behalf of his son, Shivaji, better known as Shahu, a boy only six years old. He carried on his preparations and resisted the Moghals as before. In these operations the Maratha fleet participated.

In 1700, Rajaram died, but his death was of no more advantage to the Emperor than that of Sambhaji. Shivaji, his eldest son, succeeded him under the regency of his mother, Tarabhai, and the struggle was continued as keenly as ever. The national spirit was roused. The Marathas had sometimes to bow before the storm, but they were never broken. They multiplied and overran the whole country. The Emperor's strength was broken: he had exhausted the revenues of the Dekhan, while the Marathas intercepted his treasure from Hindustan. His empire was unwieldy and his army got no rest. It was constantly harried, defeated in the open, supplies cut off and forts re-taken. After a quarter of a century of strife, Aurangzebe died in 1707, at Ahmednagar, hemmed in on all sides by the very Marathas for whom he at one time showed such contempt.

So ended Aurangzebe. There is little interest in the history of his successors. The last of them was sent across the seas in 1858. Their story is a record of swift ruin. Hindu martial races closed in upon their Empire. Musalman Viceroys became independent Kings. Hosts swept in from the north, till the final conquest by the British drove them aside.

The Maratha power had a strange habit of constantly shifting its local position and character. But in all its changes, it never, while it lasted, ceased to be formidable. For a time, after Aurangzebe's death, the form which the strength assumed was that of two great rival parties.

When Sambhaji was taken prisoner by Aurangzebe, his little son, Shivaji, was also taken. He was brought up at the Imperial Court, being known as Shahu. On obtaining his liberty, he threw in his lot with the Emperor, vowing allegiance to Delhi, and gathered around him a large number of adherents, who were discontented with Tarabhai's rule.

Shahu regained possession of Satara and was formally enthroned there in 1708. Tarabhai continued a fruitless struggle with Kolhapur and Panalla as a base of operations, till 1712, when, on the death of her idiot son Shivaji, she was placed under restraint. Rajaram's younger son, Sambhaji, revived the party, but was finally defeated by Shahu and gave up his pretensions to the Maratha throne in 1729. He was, however, allowed to retain the title of Raja of Kolhapur.

At this period Balaji Bishvanath, a Brahman, was Shahu's Peshwa or Prime Minister. On his advice, Shahu demanded a recognition of his claims to all the territory that belonged to Shivaji, together with other rights, from the Moghal Viceroy of the Dekhan. In spite of the magnitude of the demands, they were conceded. The Viceroy, by these means, hoped to build up the Imperial power, instead of which he consolidated that of the Marathas. The astuteness of the Peshwa placed the Marathas in a very favourable position.

Shahu, the legitimate head of the Marathas, styled himself "King of the Hindus," though he acknowledged himself a vassal of Delhi. The importance of the Marathas was increased by the consideration shown them by the Moghals, and by the fatuity of the Emperor, who plotted with them against his own Viceroy. He would not ratify the latter's treaty with Shahu. On this the Viceroy promised further concessions, if Shahu would assist him against Delhi. These were granted and the Peshwa, in 1720, marched on Delhi at the head of an army. The Emperor was deposed and murdered. His successor sent back the Marathas to the Dekhan, confirming the agreements between the Viceroy and Shahu. The Maratha claims were thus recognised by the Imperial Government.

Owing to the illiteracy of the Marathas, the presence of Brahmans was necessary. The Peshwa took full advantage of this to increase the subjugation of Shahu to his master mind. He also caused a common interest to spring up between the various Maratha chiefs and encouraged a common encroachment on the Moghal power. Though paving the way for the supremacy of the Peshwa, the Marathas undoubtedly formed a nation in a manner that no other body of people in India, except perhaps the Sikhs, ever did, and for a time they had their way.

In the interim, the English merchants at Bombay, by a policy of discreet neutrality, flourished.

While the Empire of Delhi was being shaken by revolts in the Punjab and Kashmir, Nizam-ul-Mulk, the Viceroy of the Dekhan, was conspiring against it. He took possession of Golconda and Hyderabad and founded the dynasty of the Nizams of Hyderabad. Aurangzebe had destroyed two great Muhammadan kingdoms in the Dekhan, but, within twenty years of his death, another had sprung into existence.

Nizam-ul-Mulk hoped to secure his position by sowing dissensions amongst the Marathas. But a considerable change had come over the Hindu power. Baji Rao had succeeded Balaji Vishvanath. With the rise of the Peshwas there arose to power the four great

Maratha families of Sindia, Holkar, the Gaekwar of Baroda and the Raja of Berar.

Baji Rao perceived it was time to bring into better order the possessions acquired by the Marathas. He pointed out the imbecility of the Moghal authorities and degeneracy of the empire, to Shahu, urging him to spread his power. The Nizam lost no opportunity of creating dissension among the Marathas, but took care to preserve the integrity of his own dominions. He was quite ready to aid the Peshwa in pulling down the dominions of their common lord. He received assurances of the Peshwa's goodwill, so long as he refrained from interfering with the Maratha invasion of Hindustan. Accordingly, Holkar ravaged Bengal and Oude, while Baji Rao marched against Delhi. The Emperor, seeing himself menaced, induced the Nizam to assist him. The latter marched against the Peshwa, was defeated and had to cede all the country between the Narbada and Chambal, as well as to purchase exemption against further action.

The Marathas, at this time, attacked the Portuguese, at Salsette and Bassein, whom they crushed. Thus the only rival European power to England came to an end.

Nadir Shah, King of Persia, now invaded India, defeated the Imperial army, plundered Delhi and laid it in ashes. This event caused a temporary truce between the various factions in India, who understood, for the time, that they had but one common enemy. Perceiving this Nadir Shah retreated with his loot.

Baji Rao died in 1740, being succeeded by his eldest son, Balaji Baji Rao. Under his auspices, the Marathas had become the most powerful people in India. A century earlier they had not been heard of, now their name was a terror as far as Delhi and Orissa, Madras and Trichinopoli. The Moghal Empire was at their mercy, the Portuguese humbled. The English and French, unaware of their own strength, were as yet afraid to try conclusions with them.

Shahu died in 1749, being succeeded by his adopted heir, Rama, grandson of Tarabhai. Before his death he practically handed over the government of the Maratha Empire to the Peshwa, on condition of his perpetuating the Raja's name and keeping up the dignity of the house of Shivaji through the grandson of Tarabhai and his descendants. Kolhapur was to remain a separate estate.

Thus the dominions, that Shivaji had created passed from the hands of his family to the Brahman Minister, who now became hereditary ruler of the nation, but in deference to popular tradition, it was expedient to maintain one of his lineage as a nominal King.

About this period two men of mark, largely connected with Indian history, appeared on the scene. They were Dupleix and Clive. The English had no idea of creating an Empire and conquering the land. Dupleix, a Frenchman, on the other side of India, grasped the possibility of forming a powerful European Empire in India. He also perceived the magnificent material the natives of India were for becoming soldiers and raised the first sepoy regiment. But Robert

Clive was greater than Dupleix. He was a young English merchant, who exchanged the ledger for the sword, and by working out the Frenchman's idea, added a continent to the British Empire.

The original capital of Shivaji's Empire had been Raigarh. Under Sambhaji, it was, if anywhere, at Sangameshwar, south of Raigarh. Under Shahu, it had been moved to Satara, Kolhapur being the rival seat of Maratha power. Upon the death of Shahu and the access to power of the Peshwas, it was transferred to Poona, which remained, to the last, the capital of the Marathas.

In 1751, the English had to protect themselves against the depredation of the Marathas in Calcutta, and forts at Katak and Saharanpur attest to the power to which they attained. Under Balaji Baji Rao the Maratha power reached its zenith and seemed likely to spread over the whole of the Indian Peninsula.

The invasion of Nadir Shah was followed by one by the Afghan, Ahmad Shah Abdali, which was driven back. A second invasion, by the same person, was more successful, the Punjab being ceded to him. Civil war followed and the streets of Delhi were deluged with blood. The aid of the Marathas was again sought in 1754. Dissensions arose between the Emperor and his Minister, and the latter called on the Marathas, whom Raghunath Rao led against the Emperor. In 1758 he entered Lahore in triumph and Shivaji's prophecy was accomplished, which said that the Marathas should water their horses in the Indus and Hughli.

In 1759, Abdali advanced to recover the Punjab. The Empire being, to all intents and purposes, at an end, the struggle lay between the Marathas and Afghans. Had the latter been driven out, the Emperor of India would have been Mahadaji Sindia, the famous son of Ranoji and the only surviving son of Jyapa.

In the meantime, affairs had been prospering in the Dekhan. After a short struggle with the Nizam, the Peshwa obtained possession, in perpetuity, of the forts of Ahmednagar and Asirgarh, the entire province of Bijapur and much of Aurangabad, with a large revenue. The Moghal possessions in the Dekhan were thus reduced to a minimum, and the Peshwa's army was free to march on the Punjab.

The flower of the Maratha army accordingly marched, under the command of Sidashiva Rao and Vishvas Rao, to Hindustan. It rivalled in splendour and magnificence the gorgeous camp of Aurangzebe. The cause appearing to be the national one of all Hindus, Rajputs, Pindharis and irregulars of all descriptions flocked to the Maratha standard. The army arrived before Delhi in the hot weather of 1760, and went into quarters. After the monsoon, Ahmad Abdali moved towards Delhi, and the contending forces entrenched themselves opposite each other at Panipat, where they lay inactive for three months. In January 1761, provisions running scarce in the Maratha camp, their generals gave the signal for battle. It was a struggle between religions. The fierce shouts of the Muhamnadans "Allah! Allah! and Din! Din!" were met by the Hindu "Har! Har! Mahadev!" The battle was furiously

contested, but the Afghans prevailed. Vast numbers of Marathas were killed and made prisoners.

The question of Hindu supremacy over India was decided once for all. Ten years later, when Mahadaji Sindia interfered to place Shah Alam on the throne, it was to benefit the English merchants of Calcutta.

The grief in Maharashthra was terrible after the battle of Panipat. Both Sidashiva Rao and Vishvas Rao had been killed. The Peshwa never recovered the shock and died shortly after at Parvati. Although the possibility of Hindu supremacy over India had vanished, the Marathas still remained, for a time, the most powerful people in the country.

The empire of Delhi had passed away. All that remained were a few small districts in the neighbourhood of the capital. The Punjab was Ahmad Abdali's possession. The Rohillas were powerful in Rohilkund. Oude, nominally a viceroyalty, was really an independent kingdom and a close ally of the British. In the name of Mir Jafar, the Company was supreme in Bengal, Behar and Orissa. The Rajputs had long separated from the Emperor. The territories of the Nizam were considerably reduced. The French power was broken, the Dutch destroyed and the Portuguese reduced to insignificance. This had been brought about by the English in the short space of time between 1755 and 1761. In Bengal, they were on the high road to the conquest of India. In the west, as yet, they possessed only the Island of Bombay, and Fort Victoria, with a few villages at Bankote and Surat. The Marathas held the Konkan, Dekhan and Guzerat, with claims on Kathiawar, Malwa, Khandeish, Berar, Bijapur and most of Aurangabad, and the old Hindu kingdom of Tanjore. Besides this, their demands for chauth extended over the greater part of India and they held Katak and Orissa. Sindia, Holkar, the Gaekwar of Baroda and the Raja of Berar were, however, serious rivals to the power of the Peshwa. The most important of the late political changes was the fact that it was to be the English and not the French, who were to rule India. Many years of fighting, however, had to be passed through before the turbulent Marathas bowed to England's might, during which many anxious periods were experienced.

At this period, a new power arose in Mysore, where one Haider Naik threw in his lot with the Hindu Raja. Later on this State proved a powerful antagonist to the English.

Between the years 1761—81, what was known as the First Maratha War took place. During this period, a desultory but constant state of warfare was carried on between the English, Marathas and Mysore, in which the Nizam was more or less mixed up. No particularly striking events occurred to mark it. Victory inclined, at varying intervals, to one side and then to the other. Much fighting took place, on and about the Ghats, between Bombay and Poona. Pledges were made and broken, as convenient to the contracting parties.

During the conflict, a marked change had been coming over the Maratha Empire. The great houses of Sindia, Holkar, the Gaekwar of Baroda, and Bhonsle of Berar were rapidly growing into independent States, little, if at all, less powerful than the Peshwa himself. Instead of a single Empire the English had to do with a more or less lax confederacy, each of whose members was actuated by his own interest rather than by any spirit of national patriotism. This, of course, favoured the English; had the Marathas shown an united front, their conquest would have proved a still longer task.

Desultory warfare continued till about 1800. In the meanwhile Sindia became most powerful. His idea was to found a great Maratha State between the Ganges and Jumna, which, however, was never completed. Mysore continued troublesome and some difficulty was experienced, owing to the interference of the French. Nothing of particular note occurred. The English continued consolidating their possessions. British power had advanced so far that it must either perish or be supreme in India.

Lord Mornington, afterwards Marquis of Wellesley, arrived in India in May 1798. His first efforts were directed to the renewal of the alliance with the Nizam and Peshwa, against Tipu of Mysore, and to the driving of the French out of India.

An army, under General Harris, advanced against Tipu and defeated him. Mysore was handed over to its rightful owner, and portions being retained by the English and Nizam. The Peshwa Sindia had still to be reckoned with.

On the death of Nana Farnavis *alias* Balaji Janardin, the Peshwa, in March 1800, supreme disorder reigned in the Dekhan.

Holkar and Sindia were at enmity, which led to the defeat of the latter in October 1802. Holkar declared he would protect the Peshwa from the usurpation of Daolat Rao Sindia. Although Baji Rao was delighted at the idea of getting rid of Sindia, he was not prepared to accept Holkar and the terms he offered. A battle ensued, in which Holkar defeated the combined forces of Sindia and the Peshwa. The latter fled and appealed to the English. A treaty was entered into by which he gave up his authority over the great Maratha houses in order to be secured in the semblance of his ancient dignity.

Sindia proved recalcitrant and an expedition moved against him under General Wellesley, afterwards Duke of Wellington. In August 1803, Ahmednagar was taken and, on the 21st September, Assaye was fought. In the meanwhile, Lake had been pursuing a victorious course in Hindustan and driving Sindia's forces before him. He defeated the Marathas under the walls of Delhi and entered the city of the great Moghal in triumph. Shah Alam, the aged Emperor, who had been sightless for fifteen years, received the conqueror in the faded remnants of Imperial State, for the second time, under the protection of the Company. Laswari was won on the 18th October and the British were supreme over Delhi and Agra, and all Sindia's possessions north of the Chambal.

Wellesley next turned his attention to Raghoji Bhonsle of Berar and crushed him.

After these events, treaties were entered into with Sindia and Berar to the advantage of the British, Sindia being restricted, more or less, to Gwalior, while the Berars were handed over to the Nizam.

Holkar stood aloof, but in 1808 he determined to take Sindia's place in Hindustan and fight Lake, which he did with the usual luck.

Although the supremacy of the British was being gradually established during these years, the Peshwa, Baji Rao, was occupied in plotting against them. This led to the Third Maratha War, and the final overthrow of the Maratha power.

A short resumé of this will now be given.

Through the advice of one Trimbakji Danglia, a man who had risen to a high official position, Baji Rao prepared his way, for rebellion against the English, by greatly increasing his army and consolidating his position, as head of all the Marathas. His object was two-fold, *viz.*, to revive the Maratha policy, which would make him lord over Sindia, Holkar, and other chiefs, and to shake off the British yoke. With this end in view, he negotiated a secret treaty of general confederacy and support with Sindia, Holkar, Bhonsle of Berar and the Pindharis.

After this, the Peshwa turned his eyes to Guzerat. In order to settle matters, an envoy was despatched from Baroda to the Peshwa's court at Poona. The envoy, Gangadhar Shastri, was murdered, on the 14th July 1815, while accompanying the Peshwa on a journey to Pandharpur, by the agents of Trimbakji Danglia. As Baroda was under the protection of the British the Peshwa was informed that unless Trimbakji was surrendered, Poona City would be attacked. This led to his surrender in September. Although the Peshwa simulated friendship, it was evident that his plans for a Maratha confederacy against British rule steadily assumed a more definite form. Gatherings of armed men took place in spite of the remonstrances of Government. Finally, the Peshwa replied that if the absurd report of an insurrection was believed, the British might suppress it themselves. Trimbakji, who had effected his escape, was at the head of these gangs and his surrender was insisted on, as well as the instant delivery of the forts of Singarh, Purandhar and Raigarh. These terms were enforced by the British Resident and accepted. The other alternative was a declaration of war, at the expiration of twenty-four hours. Three days later, orders were received from the Governor-General exacting greater punishment. The terms were hard and humiliating. They reduced Baji Rao's position to so low a degree that he could have continued as the head of his State in name only. With great reluctance, he accepted these terms, though he only meant to abide by them, so long as it suited his convenience.

The Peshwa, not satisfied with the terms of his treaty, worked on Sir John Malcolm, the agent, and more or less argued him over, and obtained possession of the forts, etc., he had already forfeited. Sir John also suggested that he should recruit his army with a view to

assisting the English against the Pindharies, who were giving trouble. This was an excellent cloak to disguise his real intentions. He confided his plans to Bapu Gokla who had succeeded Trimbakji Danglia.

The Peshwa's scheme was to assassinate the Resident by corruption of the native troops, and, even, of their British officers. One Yeshwant Rao Ghorpare was commissioned to carry out the design, but, instead of so doing, he informed the Resident. The last interview between the Peshwa and the Resident, Mountstuart Elphinstone, took place on the 14th October 1817.

On the 19th October, in honour of the Dasehra, a large gathering of troops took place. The Resident was treated with marked discourtesy and the manners of the Marathas were most overbearing and insolent. It was a time of much anxiety for the English, who were not very numerous. During the few days that followed, the tension increased. The Peshwa hesitated in attacking the British. On the 30th October, the British force was augmented by the arrival of a British Regiment from Bombay. The position occupied in Poona being bad, on the 1st November, the English moved out to Kirkee. On the 5th November, the Peshwa finally made up his mind to attack, watching the battle from the Temple of Parvati. The Marathas lay between the Residency and the position of the English at Kirkee, consequently, Elphinstone moved out to join them.

It was the afternoon of a sultry Dekhan day. The heat was almost stifling: there was not a breath of wind to blow aside the clouds of dust. The Maratha army poured out from Poona, in the direction of Kirkee, through fields ready to harvest—an imposing spectacle. The low hills that edged the plateau were covered with infantry. Endless streams of horsemen issued from the city and covered the plain. The air was filled with the trampling of horses and rumbling of cannon. The mighty wave of horsemen moved onward in all the pomp of war, with apparently irresistible force. But the battle was not to be to the strong. Nothing daunted at his vast array, the English force of 2,800, of whom 800 alone were Europeans, was eager for the fray. By the advice of the Resident, they dashed at the advancing enemy. The Marathas were astounded by this act of daring. Their spirits were already damped by an evil omen, for the staff of their Jaripatka, or national standard, had broken in twain ere they left the city. Gokla did all that was possible for a brave soldier to do by leading a brilliant cavalry charge. The battle was won. The Maratha army was utterly disconcerted by the unexpected onslaught of the British forces.

While the battle raged, the Residency was plundered and burnt by Bajji Rao's orders, and two British officers, brothers, named Vaughan, who had previously been taken prisoner at Talegaon, were barbarously hanged.

Bitter was the despair of the Peshwa as he witnessed the Battle of Kirkee from Parvati. He poured out terrible upbraidings on

those who had urged him to defy the British power. The Maratha Empire was at an end. It had been founded by the massacre of Afzul Khan at Pratapgarh; it fell with the attempted massacre of the British Resident at Poona.

The Peshwa, at first, fled to Satara, his army evacuating Poona. He then continued his flight into the Western Ghats. Several columns were despatched through the Dekhan and Konkan in pursuit of him, which eventually culminated in the Battle of Koregaon, fought on the 1st January 1818.

The British force consisted of 500 men, supported by two 6 pounders, manned by 24 Europeans of the Madras Infantry. Also 300 newly raised Irregular Horse, the whole under the command of Captain Francis Staunton. This force was marching from Sirur to Poona. On the morning of the 1st January 1818, it arrived at Koregaon, on the banks of the Bhima, some 17 miles north-east of Poona. On arrival, it found the whole of the Peshwa's army, and a large number of Arabs, under Baji Rao, encamped before it. Staunton took up a position in the village and awaited the assault of the Marathas, prepared to sell his life dearly. A terrible battle raged all day, and it was entirely due to the heroic valour of Staunton and his officers that the Marathas were repulsed. But for them, the men would have surrendered. As night fell, the attack became less fierce, and by 9 o'clock the artillery ceased, when the village was evacuated by the Peshwa's troops. The Regiment that composed the greater part of this force is now the 102nd King Edward's Own Grenadiers. A monument, erected on the spot, tells the traveller of the fierce fight that was waged where it stands. Maratha minstrels, be it told to their credit, sing of the glory of the defence.

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THE REGIMENTAL TRAINING OF SCOUTS—NATIVE INFANTRY.

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There seems at the present moment to be a great diversity of opinion as to the duties of Scouts and the *Raison d'Etre* of their existence in the same field as skirmishers.

Infantry Training, 1905, lays down that all bodies of Infantry in the field should feel their way by means of Scouts, who should be pushed out several hundred yards in advance, and to the flanks.

This is quite sound. But to allow the several hundred yards to be too elastic, at once does away with the main object: as the numbers available for scouting are very limited, and even if the leading Scouts on the flanks and in front are but a mile away, this makes a distance of two miles between the Scouts on either flank, and the area to be traversed by orders and reports becomes unduly extended.

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To say that the Scout is for observation and not for fighting is perfectly correct: but to allow him to start on his perilous venture, under the impression that he will commit a crime if he uses his rifle, is to hamper his intelligence and to handicap his discretion; and his feelings are best compared to those of a Sentry in peace time with a loaded rifle and a doubtful "friend" loitering near his post. He feels "If I shoot I should certainly be tried for murder, and if I don't shoot I shall be tried for not shooting."

The admirable principles to be impressed on Scouts are well set forth in Infantry Training; but to leave a suspicion in a Scout's mind that he is expected to be a Burnham is to overload his capacity to start with.

Now his duties in attack are, in addition to seeing and reporting things, to prevent the enemy from doing the same, and therefore a Scout should thoroughly understand that he must shoot the enemy's Scouts whenever met with.

In time of war the bullet would decide which Scout was to advance: but at manœuvres the duties of the Scouts are rendered abortive by the absence of umpires on the spot, and the spectacles of Scouts of both branches running up to within a few yards of the enemy's Scouts, observing the dispositions which would not be open to the Scouts of *both* sides on service, and then *one* side retiring fired at with blank cartridge at point blank range, does not lead to practical results. It is on a par with the cavalry regiment, put out of action

Clive was greater than Duplex. He was a young English merchant who exchanged the ledger for the sword, and by working out the Frenchman's idea, added a continent to the British Empire.

The original capital of Shivaji's Empire had been Raigarh. Under Sambhaji, it was, if anywhere, at Sangameshwar, south of Raigarh. Under Shahu, it had been moved to Satara, Kolhapur being the rival seat of Maratha power. Upon the death of Shahu and the access to power of the Peshwas, it was transferred to Poona, which remained, to the last, the capital of the Marathas.

In 1751, the English had to protect themselves against the depredation of the Marathas in Calcutta and forts at Katak and Saharanpur attest to the power to which they attained. Under Balaji Baji Rao the Maratha power reached its zenith and seemed likely to spread over the whole of the Indian Peninsula.

The invasion of Nadir Shah was followed by one by the Afghan, Ahmad Shah Abdali, which was driven back. A second invasion by the same person was more successful, the Punjab being ceded to him. Civil war followed and the streets of Delhi were deluged with blood. The aid of the Marathas was again sought in 1754. Dissensions arose between the Emperor and his Minister, and the latter called on the Marathas, whom Raghunath Rao led against the Emperor. In 1758 he entered Lahore in triumph and Shivaji's prophecy was accomplished, which said that the Marathas should water their horses in the Indus and Hughli.

In 1759, Abdali advanced to recover the Punjab. The Empire being to all intents and purposes at an end, the struggle lay between the Marathas and Afghans. Had the latter been driven out, the Emperor of India would have been Mahadaji Sindia, the famous son of Ranaji and the only surviving son of Jyaji.

In the meantime, affairs had been prospering in the Dekkan. After a short struggle with the Nizam, the Peshwa obtained possession, in perpetuity, of the forts of Ahmednagar and Asargadh, the entire province of Bhopal, and much of Aurangabad, with a large revenue. The Mughal possessions in the Dekkan were thus reduced to a minimum, and the Peshwa's army was free to march on the Punjab.

The flower of the Maratha army accordingly marched under the command of Sadashiv Rao and Vishwas Rao to Hindustan. It rivaled in splendour and might the enormous camp of Aurangzeb. The camp, appearing to be a natural one, had Hindustani Reports of "a sea of soldiers," so that descriptions picked up the Maratha standard. The army arrived before Delhi in the hot weather of 1760, and a stormy winter. After the rains, an Ahmad Abdi moved towards Delhi, and the opposing forces entrenched themselves opposite each other at Panipat, where they lay inactive for three months. In January, 1761, provisions running scarce in the Maratha camp, the British gave the signal for battle. It was a struggle between giants. The heavy shafts of the Maratha chiefs, Asaf, Asaf Khan and Daulat Khan, were met by the Hurra, Hurra, Hurra, Maratha yell. The battle was furious

contested, but the Afghans prevailed. Vast numbers of Marathas were killed and made prisoners.

The question of Hindu supremacy over India was decided once for all. Ten years later, when Mahadaji Sindia interfered to place Shah Alam on the throne, it was to benefit the English merchants of Calcutta.

The grief in Maharashthra was terrible after the battle of Panipat. Both Sidashiva Rao and Vishvas Rao had been killed. The Peshwa never recovered the shock and died shortly after at Parvati. Although the possibility of Hindu supremacy over India had vanished, the Marathas still remained, for a time, the most powerful people in the country.

The empire of Delhi had passed away. All that remained were a few small districts in the neighbourhood of the capital. The Punjab was Ahmad Abdali's possession. The Rohillas were powerful in Rohilkund. Oude, nominally a viceroyalty, was really an independent kingdom and a close ally of the British. In the name of Mir Jafar, the Company was supreme in Bengal, Behar and Orissa. The Rajputs had long separated from the Emperor. The territories of the Nizam were considerably reduced. The French power was broken, the Dutch destroyed and the Portuguese reduced to insignificance. This had been brought about by the English in the short space of time between 1755 and 1761. In Bengal, they were on the high road to the conquest of India. In the west, as yet, they possessed only the Island of Bombay, and Fort Victoria, with a few villages at Bankote and Surat. The Marathas held the Konkan, Dekhan and Guzerat, with claims on Kathiawar, Malwa, Khandeish, Berar, Bijapur and most of Aurangabad, and the old Hindu kingdom of Tanjore. Besides this, their demands for chauth extended over the greater part of India and they held Katak and Orissa. Sindia, Holkar, the Gaekwar of Baroda and the Raja of Berar were, however, serious rivals to the power of the Peshwa. The most important of the late political changes was the fact that it was to be the English and not the French, who were to rule India. Many years of fighting, however, had to be passed through before the turbulent Marathas bowed to England's might, during which many anxious periods were experienced.

At this period, a new power arose in Mysore, where one Haidar Naik threw in his lot with the Hindu Raja. Later on this State proved a powerful antagonist to the English.

Between the years 1761—81, what was known as the First Maratha War took place. During this period, a desultory but constant state of warfare was carried on between the English, Marathas and Mysore, in which the Nizam was more or less mixed up. No particularly striking events occurred to mark it. Victory inclined, at varying intervals, to one side and then to the other. Much fighting took place, on and about the Ghats, between Bombay and Poona. Pledges were made and broken, as convenient to the contracting parties.

During the conflict, a marked change had been coming over the Maratha Empire. The great houses of Sindia, Holkar, the Gackwar of Baroda, and Bhonsle of Berar were rapidly growing into independent States, little, if at all, less powerful than the Peshwa himself. Instead of a single Empire the English had to do with a more or less lax confederacy, each of whose members was actuated by his own interest rather than by any spirit of national patriotism. This, of course, favoured the English; had the Marathas shown an united front, their conquest would have proved a still longer task.

Desultory warfare continued till about 1800. In the meanwhile Sindia became most powerful. His idea was to found a great Maratha State between the Ganges and Jumna, which, however, was never completed. Mysore continued troublesome and some difficulty was experienced, owing to the interference of the French. Nothing of particular note occurred. The English continued consolidating their possessions. British power had advanced so far that it must either perish or be supreme in India.

Lord Marmington, afterwards Marquis of Wellesley, arrived in India in May 1798. His first efforts were directed to the renewal of the alliance with the Nizam and Peshwa against Tipu of Mysore, and to the driving of the French out of India.

An army, under General Harris, advanced against Tipu and defeated him. Mysore was handed over to its rightful owner and portions being retained by the English and Nizam. The Peshwa Sindia had still to be reckoned with.

On the death of Nana Farnavis *alias* Balaji Janardin, the Peshwa, in March 1800, supreme disorder reigned in the Dekhan.

Holkar and Sindia were at enmity, which led to the defeat of the latter in October 1802. Holkar declared he would protect the Peshwa from the usurpation of Daulat Rao Sindia. Although Ravi Rao was delighted at the idea of getting rid of Sindia he was not prepared to accept Holkar and the terms he offered. A battle ensued in which Holkar defeated the combined forces of Sindia and the Peshwa. The latter fled and appealed to the English. A treaty was entered into by which he gave up his authority over the great Maratha houses in order to be seated in the splendour of his ancient dignity.

Sindia proved recalcitrant and an expedition moved against him under General Wellesley, afterwards Duke of Wellington. In August 1803 Amnoddargar was taken and on the 21st September Assaye was fought. In the morning, Lake Bell being rising, a victorious course in Hindustan and during Sindia's absence from India. He defeated the Marathas on the 23rd October and captured the city of the great Moghul in the person of Saad Ali and the aged Emperor who had been sightless for fifteen years, received the sovereignty in the ruled remnants of Emperor State for the second time under the protection of the Company. Laswar was won on the 18th October and the British were supreme over Holkar and Agrewal in Sindia's presence, the north of the Channel.

Wellesley next turned his attention to Raghoji Bhonsle of Berar and crushed him.

After these events, treaties were entered into with Sindia and Berar to the advantage of the British, Sindia being restricted, more or less, to Gwalior, while the Berars were handed over to the Nizam.

Holkar stood aloof, but in 1808 he determined to take Sindia's place in Hindustan and fight Lake, which he did with the usual luck.

Although the supremacy of the British was being gradually established during these years, the Peshwa, Baji Rao, was occupied in plotting against them. This led to the Third Maratha War, and the final overthrow of the Maratha power.

A short resumé of this will now be given.

Through the advice of one Trimbakji Danglia, a man who had risen to a high official position, Baji Rao prepared his way, for rebellion against the English, by greatly increasing his army and consolidating his position, as head of all the Marathas. His object was two-fold, *viz.*, to revive the Maratha policy, which would make him lord over Sindia, Holkar, and other chiefs, and to shake off the British yoke. With this end in view, he negotiated a secret treaty of general confederacy and support with Sindia, Holkar, Bhonsle of Berar and the Pindharis.

After this, the Peshwa turned his eyes to Guzerat. In order to settle matters, an envoy was despatched from Baroda to the Peshwa's court at Poona. The envoy, Gangadhar Shastri, was murdered, on the 14th July 1815, while accompanying the Peshwa on a journey to Pandharpur, by the agents of Trimbakji Danglia. As Baroda was under the protection of the British the Peshwa was informed that unless Trimbakji was surrendered, Poona City would be attacked. This led to his surrender in September. Although the Peshwa simulated friendship, it was evident that his plans for a Maratha confederacy against British rule steadily assumed a more definite form. Gatherings of armed men took place in spite of the remonstrances of Government. Finally, the Peshwa replied that if the absurd report of an insurrection was believed, the British might suppress it themselves. Trimbakji, who had effected his escape, was at the head of these gangs and his surrender was insisted on, as well as the instant delivery of the forts of Singarh, Purandhar and Raigarh. These terms were enforced by the British Resident and accepted. The other alternative was a declaration of war, at the expiration of twenty-four hours. Three days later, orders were received from the Governor-General exacting greater punishment. The terms were hard and humiliating. They reduced Baji Rao's position to so low a degree that he could have continued as the head of his State in name only. With great reluctance, he accepted these terms, though he only meant to abide by them, so long as it suited his convenience.

The Peshwa, not satisfied with the terms of his treaty, worked on Sir John Malcolm, the agent, and more or less argued him over, and obtained possession of the forts, etc., he had already forfeited. Sir John also suggested that he should recruit his army with a view to

assisting the English against the Pindhars, who were giving trouble. This was an excellent cloak to disguise his real intentions. He confided his plans to Bapu Gokla who had succeeded Trimbsky Dangleha.

The Peshwa's scheme was to assassinate the Resident by corruption of the native troops, and, even, of their British officers. One Yeshwant Rao Ghorpare was commissioned to carry out the design, but, instead of so doing, he informed the Resident. The last interview between the Peshwa and the Resident, Mountstuart Elphinstone, took place on the 14th October 1817.

On the 19th October, in honour of the Das-hra, a large gathering of troops took place. The Resident was treated with marked discourtesy and the manners of the Marathas were most overbearing and insolent. It was a time of much anxiety for the English, who were not very numerous. During the few days that followed the tension increased. The Peshwa hesitated in attacking the British. On the 30th October the British force was augmented by the arrival of a British Regiment from Bombay. The position occupied in Poona being bad, on the 1st November, the English moved out to Kurkee. On the 5th November, the Peshwa finally made up his mind to attack, watching the battle from the Temple of Parvati. The Marathas lay between the Residency and the position of the English at Kurkee, consequently Elphinstone moved out to join them.

It was the afternoon of a sultry Dekkan day. The heat was almost stifling; there was not a breath of wind to blow aside the clouds of dust. The Maratha army poured out from Poona, in the direction of Kurkee, through fields ready to harvest, an imposing spectacle. The low hills that edged the plateau were covered with infantry. Endless streams of horsemen issued from the city and covered the plain. The air was filled with the trampling of horses and rumbling of cannon. The mighty wave of horsemen moved onward in all the pomp of war, with apparently irresistible force. But the battle was not to be to the strong. Nothing daunted at this vast array, the English force, of 2800, of whom 800 were Europeans, was eager for the fray. By the advice of the Resident, they dashed at the advancing enemy. The Marathas were astounded by this act of daring. Their spirits were already damped by an evil omen, for the staff of their Jangpuk or national standard had broken in two when they left the city. Gokla and Law, that was possible, for a brave soldier took by leading a hand at every charge. The battle was won. The Maratha army was utterly dispersed by the unexpected onslaught of the British forces.

When the battle raged the Residency was pounded and burnt by four Russian canons, and two British officers, both named Vang, and who had previously been taken prisoner at Elphinstone were badly injured.

Better was the despair of the Peshwa as he witnessed the battle of Kurkee from Parvati. He poured out a torrent of maledictions on

those who had urged him to defy the British power. The Maratha Empire was at an end. It had been founded by the massacre of Afzul Khan at Pratapgarh; it fell with the attempted massacre of the British Resident at Poona.

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This is quite sound. But to allow the several hundred yards to be too elastic, at once does away with the main object; as the numbers available for scouting are very limited, and even if the leading Scouts on the flanks and in front are but a mile away, this makes a distance of two miles between the Scouts on either flank, and the area to be traversed by orders and reports becomes unduly extended.

So long as the Scout is merely feeling for the enemy and sending back reports as to positions and obstacles, he is a Scout. But once he begins to use his rifle, he becomes a Skirmisher, and this must be clearly explained to him.

To say that the Scout is for observation and not for fighting is perfectly correct: but to allow him to start on his perilous venture, under the impression that he will commit a crime if he uses his rifle, is to hamper his intelligence and to handicap his discretion; and his feelings are best compared to those of a Sentry in peace time with a loaded rifle and a doubtful "friend" loitering near his post. He feels "If I shoot I should certainly be tried for murder, and if I don't shoot I shall be tried for not shooting."

The admirable principles to be impressed on Scouts are well set forth in Infantry Training; but to leave a suspicion in a Scout's mind that he is expected to be a Burnham is to overload his capacity to start with.

Now his duties in attack are, in addition to seeing and reporting things, to prevent the enemy from doing the same, and therefore a Scout should thoroughly understand that he must shoot the enemy's Scouts whenever met with.

In time of war the bullet would decide which Scout was to advance: but at manœuvres the duties of the Scouts are rendered abortive by the absence of umpires on the spot, and the spectacles of Scouts of both branches running up to within a few yards of the enemy's Scouts, observing the dispositions which would not be open to the Scouts of *both* sides on service, and then *one* side retiring fired at with blank cartridge at point blank range, does not lead to practical results. It is on a par with the cavalry regiment, put out of action

in one part of the field, retiring and moving rapidly round in rear of its own positions, and appearing an hour later in a totally different part of the field to repeat the same manoeuvre.

Now as the Scouts of an Infantry Battalion are supposed to be several hundred yards on the front and flanks, it is only logical to assume that the Battalion is in fighting formation and expects news of the close proximity of the enemy at any moment.

Equally may it be assumed that the Scouts will as often as not find their enemy close upon them when they find him at all. If the enemy be discerned a long way off there is as a rule ample time and cover to signal all reports, so there is no particular rapidity required.

It is to meet the occasion of a sudden collision by the Scouts, with the enemy at close quarters, that the chief method and training is required. A simple system is only simple where all the Scouts are thoroughly well trained. Now-a-days the actual scouting is well done, but the reports that are sent in come too late, owing to the fact that some regiments aim too high and insist on written messages. These take long in inception, longer to write, longer still to read and then are often unintelligible, even if they do arrive in time.

Written reports are only useful and necessary, where special Scouts with special means of conveying their message rapidly, are at a long distance from their Corps.

Signalling, Semaphore or otherwise, is in most cases clumsy and impracticable owing to the nearness of the enemy; and verbal messages are on these occasions far quicker owing to the nearness of the object of the message!

A system, that might be called the telephone system, whereby every Scout is connected from front to rear, and flank to flank, and the whole centred on the Officer Commanding the Scouts, is shown here.

It is based on the existence in each company of a regiment, of two groups of four Scouts, each under a N. C. O. or group commander.

Each company's Scouts have their recognized formation from front to rear, and are numbered from front to rear so that each Scout when asked can say "I am No. 4 (or otherwise) of No. such and such a company."

The companies being numbered always from right to left, this information alone will show the officer or soldier making the inquiry the position of any part of the "fan" of Scouts he may wish to find.

The assumption that nearest the enemy is the most responsible part of the "fan," points to a group leader being always to the fore.

Hence the front Scout of each company is the leader of No. 1 group and he is called "No. 1 Scout".

Again, numbering from right to left, *i.e.*, from "No. 1 Scout" to "No. 8 Scout;" the Officer Commanding the Scouts has all messages reported to him thus "*No. 5 Scout reports a thick plantation that may conceal an enemy, 2,000 yards away on his left front*". He then knows exactly where to look to find what is reported as he knows fairly accurately the position of each "Scout". Note that all Scouts in rear

of No. 1 Scout and so on are trained to know their numbers and give them without affixing "Scout": it is only the leaders who are trained to call themselves "Scout" in this connection.

All orders and reports are passed on verbally from man to man, and signals are not to be used owing to the difficulty of preventing the wrong man from complying with them.

Orders sent from rear to front will be complied with by each man in rear, as he sees the man in front conform, otherwise, say, an order for the Scouts to retire is sent from the rear, there is no guarantee that the order gets to the front at all.

Now looking at the fan plan to scale which explains the whole system, it is at once apparent that the system is elastic; contract the fan till you have each company closed on the Officer Commanding Scouts; this is a close formation adopted thirty yards in front of the regiment on the order "fall in for Scouting."

The Officer Commanding Scouts explains and gives orders to the leaders in front so that all can hear, the leaders make sure their company's Scouts understand, consult together as to the distant points on which each will march and move off.

The rest follow adapting distances to the system, modified when necessary by the nature of the ground or other considerations and when each of the leading Scouts has gone a mile in his special direction, the fan is extended to its farthest limit; but is still capable of further extension should special circumstances demand it.

With very little training the messages come in accurately passed on from man to man, each man representing a telegraph pole, which helps to support the wire. This simile, better than any other, makes them quickly grasp the principle aimed at.

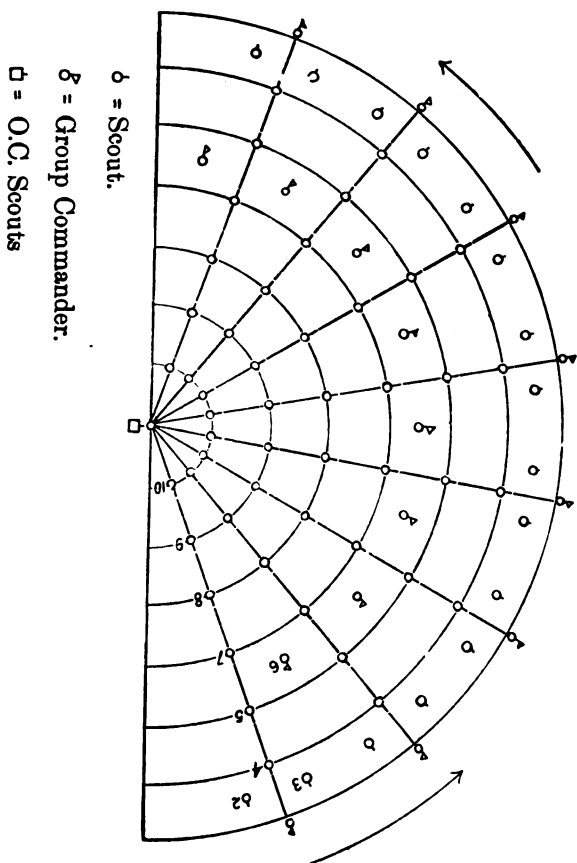
The circular lines are also represented to them as wires, along which all news of the enemy and any other must be passed, so that each unit in the system knows all that is going on. "No! It works quite smoothly with very little practice" is the reply to all who may doubt its simplicity. At first the "telegraph poles" are apt to stick too closely to their "holes"—a fault on the right side. But they very soon learn that it doesn't hurt the wire to be bent a bit, and that in close country they have to keep on the move to keep the "current" going, and that to run to meet the man with a report, is to save much time in the delivery of a message, so long as after receiving the message each man takes up his proper position again.

There is no difficulty for the officer detailed to train the regimental Scouts if he follows this system.

As regards the line dividing the Scout from the Skirmisher, it must be left to the discretion of the Officer Commanding Scouts to cross it when occasion demands, if the question is referred to him. Generally, though, events develop so quickly at the point of contact, that the leaders will have no time to wait for orders, and with instructions not to hesitate to fight when necessary, but not to provoke a fight unnecessarily, they should be intelligent enough not to feel themselves in any dilemma.

No. 8 Scout.

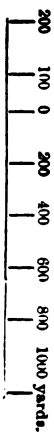
PLAN SHOWING POSITIONS OF SCOUTS.
Leading Scouts 1,200 yards to front and flanks.



No. 1 Scout.

A Group = 4 Sepoys and 1 Group Commander.
A Company = 2 Groups.
Each Company numbered from Front to Rear.
Companies told off from Right to Left.
The Scouts in neighbourhood of O.C. Scouts are purposely left in closer formation. Available under his orders for emergency

Scale 6 inches = 1 Mile.



A SUGGESTION.

By A. F.

A great deficiency in the equipment of the man in the ranks, and one which could be easily remedied is the want of a serviceable knife.

All who are used to camp life know the value of a knife that can be used for any purpose from the making of a peg or cutting firewood, to killing and skinning one's dinner.

Shikaries, though their personal equipment is usually cut down to bare necessities, seldom go unprovided with a serviceable knife.

To the many uses which the ordinary man in camp finds for his knife, the soldier on service or manœuvres may add the cutting of turf and brushwood for revetments, shelters, etc., etc., and its use as a handy weapon in emergencies. It would be easy to enlarge on the uses to which a serviceable knife could be put.

For the South African Campaign of 1899-1902 large clasp knives were issued to the troops, but these knives, though better than nothing, were not very serviceable. They were hinged on soft iron rivets which very soon gave way if subjected to hard work. My experience of them was that they seldom lasted more than a month or two at most. One of the most useful articles I possessed when a Private in a Cavalry Regiment in S. A. was a "commandeered" carving knife carried in my puttie.

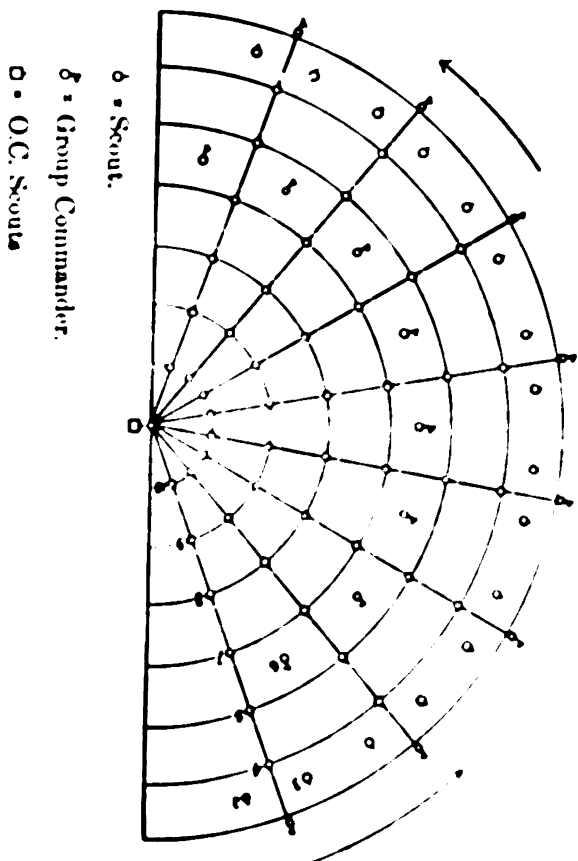
The remedy which I wish to suggest is an alteration of the present bayonet in a few details.

The bayonet for its one legitimate purpose is probably as good a weapon as there is, though perhaps somewhat short. Its great disadvantage is that it is only good for its one purpose and for nothing else. It is useless for cutting purposes as it has no cutting edge, and if it is exposed to any undue side strain it snaps. I have known several snap when in use as tin openers on service.

If the bayonet were provided with two good cutting edges, and made of softer steel to prevent snapping under a side strain, it would be of infinitely greater use to the soldier, without adding to the weight of his equipment or detracting from its value as a stabbing weapon, and this at little or no increased cost to Government.

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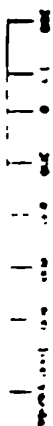


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o = O.C. Scouts

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THE EXPERIENCE OF THE RUSSO-JAPANESE WAR.

TRANSCRIPT BY CAPTAIN W. L. J. CAREY, R.A.

("Journal des Sciences Militaires," April, continued from the February number, see "Journal of United Service Institution of India," October 1906.) It should be remembered that the French article is itself a translation from the original Russian.

The method of infantry action in the modern battle depends on the effects of its own and the artillery fire. We have already examined the artillery action, in the study of infantry fire it must not be forgotten :—

1. That the various rapid fire rifles with which all armies are provided have the same value for all practical purposes, from the point of view of battle conditions.
2. That neither the rapidity, nor the precision of the fire of the rifle in the hands of a *living* man can ever be sufficiently powerful to annihilate an adversary who is superior in numbers, and capable of renewed efforts. Nerves weaken, eyesight fails, strength decreases and apathy comes to the front; victory is to him who maintains his energy the longer, and is able to strike the last blow.

Great numerical superiority at the decisive point, in troops ready to take the offensive and well endowed with tenacity of purpose, will always compel success. The losses will be enormous, but *every* man cannot be killed. An intelligent obstinacy, conscious of its strength and sensible of the correctness and opportuneness of the dispositions made, is the gage of success.

The bayonet in the hands of a stout-hearted combatant has not lost its value, but it is employed more rarely than of yore.

INFANTRY FIRE.

Ranges and descriptions of fire.—Albeit with a very heavy expenditure of cartridges the present rifle confers the possibility of inflicting serious harm on the opponent at a range of 3,000 paces. But this fire can only be employed to attack a particular tract of ground, or animate targets of some extent, such as large bodies of troops, columns, convoys, working parties, etc.

At ranges of 3,000 to 2,500 paces, with well-adjusted sights, volley fire against columns begins to give excellent results, especially in regard to moral effect; the adversary who is firing is a long way off, is invisible, and losses have already commenced to occur.

From 1,500 paces down, as a rule, fire of lines of riflemen begins, that is, individual fire.

¹ During the time spent in the Shaho position our (Russian) regiments frequently and successfully employed section and half-company volleys, at 3,000 paces, against Japanese working parties.

In consequence of the efforts made by both parties to take cover targets for volleys no longer exist at this range. It is almost impossible to make out the targets, and sometimes even to indicate the points at which to aim.

Of course if an objective appears out of cover, advantage must be taken of the mistake (which will soon be rectified) as quickly as possible, (if necessary by dispersed fire). This can only be done by using magazine fire, for there is no time for volleys.

From 1,500 paces downwards, fire is *individual* throughout the attack; and it is always varying in intensity, from magazine fire to a complete standstill, under the direction of the leaders of the firing line, or on the *personal initiative* of the riflemen. The former direct the fire according to their observation of results, and the information furnished to them, probably by observers (posted in trees, on roofs, hills, etc.) the latter according to their own observations.¹

Opportunities which occur for firing on the enemy from a flank should never be neglected; usually this occasions great disorder in the troops so attacked, and compels them to reveal their position to the riflemen who are attacking them in front.

Once the ranges of a few points in the enemy's position have been obtained, it becomes possible to throw a hail of bullets into the latter; this is the usual procedure of the Japanese infantry in battle.

As the two sides draw nearer to each other, the objectives are more clearly discerned, nervousness increases, and the firing attains a terrible intensity. The whistling of the hail of bullets recalls the hissing of a gigantic cauldron.

To take aim accurately in these last 400 or 500 paces is far from easy, and usually the bullets pass over head and strike far to the rear.²

During this period the machine gun, being a machine, acquires enormous importance. It has no nerves to weaken³ and it literally mows down the assailant's lines.

It is here that the source of the enormous moral effect of the machine gun must be sought. Its regular crack, *calm* in the midst of the nervous roaring of the combat, produces a very powerful impression.

Expenditure of ammunition.—The expenditure of cartridges is enormous. In the battles on the Sha-ho, cases have been known of regiments much below strength, like those of the 17th Corps on the 28th and 29th September (11th and 12th October) firing away

¹ Here there is a wide field for the exercise of initiative, and the education of the soldier on these lines is of great importance in the battle; 400 eyes see better in any case than those of four or six officers.

² Here fire discipline must be considered, and, on the defensive, volleys (when they can be carried out) are of great importance.

(French Translator's remark.—Inasmuch as men who are terribly worn out cannot be made to take aim correctly, it becomes a question whether it will often be possible to carry out these volleys.)

³ The firer is protected by a shield.

(French Translator's remark.—It appears that a shield is perhaps even more useful for a machine gun than for a gun.)

200,000 cartridges in a single day. The 138th Volkhovski Regiment during the 30th September, 1st, 2nd, 3rd and 4th October (13th to 17th October) expended 1,920,730 cartridges.

Although no case occurred of the lack of ammunition becoming critical, still the possibility must be kept in view.¹ To avoid difficulties there must therefore be a state of exemplary order in the immediate rear of the position occupied, a carefully made distribution of sections and open roads² and no useless convoys.

Fire discipline ; observation of the ground and the enemy.—The accuracy and rapidity of fire of the rifle cannot, under the present invisible conditions of combat formations, be fully utilised except with the aid of a good service of observation. This is an indispensable condition.

The system of observing fire should be the same as for the artillery, though on a smaller scale. The riflemen themselves ensure the observation to the front for a short distance. During the lulls three or four observers should be detailed for each section.

But in addition to this all suitable points of vantage (trees, houses, eminences on the flank or to the rear) must be utilised to post a special man, with good binoculars.

It is of no consequence if these points are in the section belonging to another company or battalion.

It is only by unceasing observation that it is possible not to lose sight of the enemy, and to penalise his smallest mistakes.

Every officer must have *good binoculars* and, in addition, there must be three or four per company for the observers.

When the ground is open and clear for a long distance over 1,500 paces, volleys are preferable. At medium and short ranges with well-disciplined troops individual firing is more effective.

What has already been said in regard to artillery and infantry fire determines the general conditions of the modern battle.

The conditions are as follows:—

- (1) Only those portions of the ground which are completely hidden from the enemy's view can be considered as sheltered from fire.
- (2) The best means of diminishing losses is not to be seen, therefore open formations are a matter of course.
- (3) It is necessary to observe the enemy oneself with the greatest care.
- (4) A special reconnaissance, made by observers without losing sight of the enemy, is necessary, in order to act in accord with their reports, and above all to be able to conduct the manœuvring in a rational manner.
- (5) Wide initiative in fire discipline.
- (6) Enormous expenditure of ammunition.

¹ The expenditure of cartridges rarely exceeded 100 to 150 cartridges per man as an average for a day's fighting—(note by French translator).

² This is very important in intersected ground, and when it is raining.

In consequence of the efforts made by both parties to take cover targets for volleys no longer exist at this range. It is almost impossible to make out the targets, and sometimes even to indicate the points at which to aim.

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¹ Here there was a mistake. The *personal initiative* is the situation of the soldier when he is not in great contact with the enemy, but when he is in a position to take advantage of a mistake.

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ARRIVAL ON THE FIELD OF BATTLE.

Arrival in the zone of possible fighting.—In accordance with information furnished by the chief commander, and received from the patrols sent out by him to reconnoitre, or to enter into communication with the more advanced troops, if there are such, the infantry as they approach to within 5, 6 or 7 versts of the field of battle, abandon the columns of route in favour of massed formations, adapted to any existing cover, so as to withdraw from the view of the enemy's observers, and halt in rear of the said cover.

The commandant of the column as a rule then either reports himself to the senior officer in the section, if the fighting has begun, or goes out to reconnoitre.

Troops halted in temporary formation before taking the order of battle should without delay send out security posts to the front and flanks; their duty is to protect their own troops from all eventualities, to prevent the enemy's patrols from seeing anything, to reconnoitre the ground, to suppress spies (which were generally numerous in Manchuria among the local population) and to secure communications with neighbouring troops. The strength of these posts for a battalion and a regiment is one section, stiffened by six or eight dismounted and three or four mounted¹ scouts.

These posts go out to a distance of $1\frac{1}{2}$ to $3\frac{1}{2}$ versts,² intrench themselves, and organise the look out towards the enemy, and on the flanks. Patrols connect them with one another, covering the whole front and flanks of the troops which have sent them out.

Experience teaches that it is only after precautions such as these have been taken that a body of troops can obtain quiet and rest, especially in mountains or very close country, like the Manchurian kaolian.³ Lastly, when a detachment is operating alone, these posts, which are sometimes increased to a half-company or company, according to the circumstances and the ground, may be of the greatest service in the deployment for battle, forming firm points of support at which observation and communication is organised beforehand.

Entry into the zone of artillery fire.—In the zone of long range artillery fire, i.e., at 5 or 6 versts from the hostile artillery positions, battalions open out by companies, and companies march in line of sections by the flank, at 30 to 40 paces interval. If there is any natural cover, companies make use thereof without regard to distances or intervals, merely avoiding exaggerated extension⁴.

¹ The Russians organised a detachment of dismounted and another of mounted scouts in each regiment, with a strength of 100 odd men—(French Translator's note).

² 1 verst = 1,066 metres = 1,154 yards

³ Without posts placed in this way (at night they are similarly put out to the rear) surprise by rifle fire such as occurred more than once during the Russo-Japanese War, becomes impossible.

⁴ In hilly country it is not always possible to move by companies in the narrow depths of the valleys, but on the other hand there is always natural cover for bodies of considerable size. The method of passing from one bit of cover to another varies, with the lie of the ground, and the nature of fire to which the troops are being subjected; whole columns at a time or even single men.

This period is the end of the formations carried out in accordance with the reconnaissances, and with information supplied by the chief commander. Commanders of battalions and regiments now make personal reconnaissances.

The further movements of battalions take place in the same manner until the zone of rifle fire is reached (in open ground at 2,000 paces).

Companies cross open ground under heavy shrapnel fire by sections, or groups sometimes by single files, at a run. In these cases the officers go on ahead at the double, and the men rally to them.

During this period it is desirable that all mounted men (including officers) should dismount, for the reason that groups of horsemen are clearly visible and form a most useful mark for the enemy.¹

Companies march independently, without paying any attention to dressing. They mark time at convenient points for defence, in case the enemy takes the offensive, and halt for short periods, care being taken to consider the position of neighbouring companies, *i.e.*, that the latter are not occupying similar points a little to the front or rear.

This manner of forming line for battle ensures that the battalion (or regiment) is always in a position to repulse every attempt of the enemy to impede the offensive movement, and furnishes the possibility, in case of need, of gradually reinforcing the fighting line, under the protection of the fire of these companies, by means of small parties drawn from the reserve.

ENTRY INTO THE ZONE OF RIFLE FIRE ; DEPLOYMENT OF COMPANIES.

On entering the rifle fire zone the battalion halts under cover, either in the firing position or immediately in rear thereof, observers being posted in the position to the extent possible. Commanders of companies go on ahead to reconnoitre their own section of ground and the terrain towards the enemy (they note favourable localities for halts, cover, suitable points from which to observe, etc.)

Thenceforward, if the ground still gives shelter from the view of the enemy's observers, the battalion continues its advance in the same manner, otherwise companies deploy into line of skirmishers.

On receiving the order to deploy, commanders of companies make known the lie of the portion of ground allotted to the company, and its extent, designate the sections to form the firing line, and despatch two or three patrols to the point indicated for the deployment. This is especially necessary where the advance lies through undergrowth or kaolian, when heights or isolated houses are to be occupied, etc. When the patrols give the signal for the advance, the commander of the firing line sends forward single groups. These

¹ Similarly all colours and standards should disappear (battalion, staff, etc.) These might very easily enable the ranging to be carried out.

² The same holds good with battalions but with still wider links.

groups advance, keeping under cover (so that the enemy may not be able to guess at the point of deployment, and find his range) towards the position indicated as their halting place, and extend to about 30 paces interval; they then examine the ground, choose a suitable line from which to fire, and lie down. The section commanders deploy their men in a sheltered locality, and then send them forward, either all at once, in groups, or one man at a time. The corporals mark the position of their squads; corrections of dressing, if necessary, are always unimportant, and will be carried out lying down. Care must be taken to avoid the traffic backwards and forwards which usually accompanies our (Russian) deployment. With practice the men do it very rapidly, and keep almost entirely under shelter from view.

The firing line then detaches its observers (1 or 2 per section).

Advance of the firing line.—The further advance is carried out in the same way. Every effort is made to reach the 800 to 600 paces range without prematurely fatiguing the men; and, if possible, without recourse to movements at the double. Fire should not be opened from a new position until all the men of the company have arrived; *premature firing may enlighten the enemy as to your whereabouts*, and afford him a chance of getting his range before the whole line is in position.

On the other hand, at short ranges, under very heavy fire from the enemy, and when movements can no longer be carried out entirely under cover from sight, the men who have made the rush or crept up to the front, open fire rapidly as they get into their places, with a view to diverting the enemy's fire from their comrades who are still coming on.

From 600 or 800 paces and nearer, the leaders of the firing line, after having replenished the ammunition for the last time, indicate the points at which each future halt is to be made, and the men start for the new position independently, either at the double or by creeping.¹

At this stage commanders of squads should be the *last* to move, after making certain that all their men have gone on.

The enemy's position is brought under a heavy fire (here it is impossible to insist on aimed fire) carried out from each halting place of the line, *this fire is continued up to the closest quarters.*

The bayonet attack then becomes practicable; it is true the firing line is in the open and in full view, but the nerves of the enemy under cover are so shaken that he is no longer in a condition to inflict losses.

Carrying out the assault.—The assault is carried out on the order or signal of the battalion commander, when he sees that the firing has made sufficient preparation for it, that the adversary is shaken²

¹ This movement must not be begun with one wing, because if so the target offered to the opponent would be the same as if the whole line were to rise at the same time.

² Signs: wild shooting, decrease of ricochets, visible movements in the enemy's advanced lines, etc.

and that the detachments intended to act on his flanks have arrived in their positions.

On the battalion commander's signal the intensity of the firing is increased to the utmost, the company reserves, if they have not already been employed, join the firing line, and the battalion reserve comes up as near as possible.

When the company reserves (or the detachment detailed for the purpose from the battalion reserve) join the firing line, it rises and advances. At between 50 and 30 paces from the enemy, Hurrah!

After driving out the enemy, the firing line pursues with the bayonet for 50, 100, or 200 yards, and as soon as it halts, opens magazine fire,¹ while the reserve reforms² and continues the forward movement, and a specially detailed portion of this reserve puts the conquered position in a state of defence.³

Before commencing the assault it is extremely important to see whether there are any trenches, portions of ditches, holes, ravines or enclosures in the enemy's position which have not been occupied by him. The occupation of such points, by even a few riflemen, produces disorder in the enemy's ranks, and greatly facilitates the attack.

The occupation of points of this kind should be effected on the initiative of the N.-C. O.'s in the firing line, and even of the men.

We have spoken above of the advantage on all occasions of taking the enemy in flank with fire, if only with a few rifles; the case is the same here. The men should be able to understand the full importance of this method of acting, and be prepared to grasp favourable opportunities without any special order. In the confusion of this stage of the fight, three or four enterprising men can seize a point of this nature without being noticed, and render invaluable service to the troops⁴ to whom they belong.

A heavy shrapnel fire on the ground immediately in the enemy's rear, and if possible enfilade fire (even by a few guns) in the last moments of the skirmishers' action, facilitates the success of the attack to an enormous extent, and lessens the losses.

We have already mentioned pursuit by artillery fire. The assault must be expected to entail heavy loss. But once a *superiority of strength* at the point attacked has been acquired, once the assailant is in a position to *renew* the attack (often a great number of times), the assault must succeed. Compensation for the losses

¹ *And not by volleys.* Volleys require too much time to steady the men, and to give orders. At this stage every moment is of value.

² Preparations are made for resistance.

³ This method of movement and attack was adopted in the 35th Division, very slight variations therefrom are made herein.

⁴ In this way on the 14th October a group of Japanese, slipping under the bank of the Sha-ho, one man at a time, occupied a house in the southern portion of Linchinpou. They fired on the flanks and rear of the wing battalion on the left of this section threw it into disorder, and greatly facilitated the success of the attack from the Choulissa side. The southern portion of the village and the advanced trenches (which had been intended to command the valley of the Sha-ho) had to be abandoned.

suffered is obtained by the fortuitous choice of the point to be attacked, and its influence on the general situation.

As we have already said the rifle in the hands of a *levy* man ends by losing its great power, and ceases to be a fatal menace to everything that appears before it.

EXAMPLE OF REPEATED ASSAULTS FINALLY CROWNED WITH SUCCESS.

The following is a reliable description of the Japanese assaults on the 22nd February (7th March) 1905 on the redoubt known as the Railway Redoubt, on the line between the villages of Khaitschenpon and Ingoua.

During the nights of the 19th February (4th March), 20th February (5th March) the III Army had changed front and thrown back its right wing. The 35th Infantry Division was in its position between the railway and the line Bezumanna Kaoulintoun. The 3rd Division was stationed on the railway between the station of Sonatoun and the village of Khaitschenpon though not reaching quite as far as the latter. The strongly fortified villages of Ingoua and Sonatoun the interval between them and Ounitchenpon had been abandoned without firing a shot.

The advanced position of the Railway Redoubt which was occupied by two companies of the Zurausk regiment and Khaitschenpon was at the angle of a salient right angle. The occupation of these by the Japanese would have rendered it impossible for the 3rd and 35th Divisions to hold their positions. These facts attracted the attention of the Japanese on the morning of the 20th February (5th March). That morning and evening were passed in unsuccessful efforts by the 3rd Division to retake Ounitchenpon and Ingoua, the redoubt and Khaitschenpon were bombarded by siege pieces in position on the other side of the Sineho.

During the night and morning of the 21st February (6th March) small groups of Japanese made attempts to penetrate the empty space between Khaitschenpon (occupied by the Manchansk regiment) and the flank of the 3rd Division, the object being to initiate the frontal attack by producing disorder with fire from the rear. But all these attempts were discovered and repulsed by the fire of the Manchansk regiment.

At dawn of the 21st February (6th March) the Japanese again opened a bombardment on the Railway Redoubt on Khaitschenpon and on Redoubt No. 1 with the 8 and 11 cm guns and 2. The common shell was accompanied by shrapnel fire from the 8 cm gun and Ounitchenpon redoubt.

A part of the shrapnel was directed on the section from the Railway Redoubt to Khaitschenpon. With a range of 200 metres the 8 and 11 cm guns sent it to the rear of the 3rd and III divisions various explosives burst between the redoubt and the village.

¹ See page 121. ² The 2nd Division was in its position between the line Bezumanna Kaoulintoun and the railway.

The damage in the village was considerable. All the blindages were destroyed, the parapet was half scattered in the ditch, and the interior of the redoubt was strewn with clods of frozen earth. The garrison stood fast, although half the men were partially asphyxiated by the gases.

Towards 4 in the afternoon the Japanese directed an attack on the redoubt from the Ingoua side (from the siege battery near the redoubt and Sifontai). Their first attempt was repelled by fire from long ranges.

Towards 5 o'clock several companies were seen crossing from Ouentchenpou to Sifontai, in which the concentration for a fresh attack was evidently taking place. The batteries of the 35th Artillery Brigade having an excellent service of observation, and being connected by telephones with Khautschenpou, bombarded Sifontai very successfully. Columns were seen to disperse and take cover behind the village; at 2,000 yards the Morchansk regiment and the garrison of the redoubt added volleys to the artillery fire. The large number of black dots left on the field testified to the heavy loss sustained by the enemy.

Before nightfall another attack on the redoubt was repulsed; but the Japanese were close up, and the firing did not cease, even in the darkness. The garrison of the redoubt was reinforced by one company from the Morchansk regiment, and one company occupied the railway cutting opposite Ingoua, while two companies of the 10th Novo-Ingermanlandski regiment closed the interval between the 3rd Division and the companies of the Morchansk and Niëjine¹ regiments occupying the line south of Khautschenpou.

At nightfall a detachment of 20 Sappers was sent towards Khautschenpou to repair the redoubt, and a company of the Niëjine regiment brought 500 sand bags from Kaoulitoun. The parapet could only be partially repaired, the blindages had been destroyed by the bursts of the heavy shell, and it was impossible to reach the accessory defences which were almost ruined, as the Japanese opened fire at once at ranges of 100 to 150 yards (from the old siege battery).

That night, like the last, a hot meal was brought on donkeys to the point on the river north of Khautschenpou, and from there the food was taken to the men in the fighting line in their own cooking pots.

The firing continued all night.

Towards 5 o'clock in the morning of the 22nd February (7th March), the Japanese opened fire with redoubled vigour from the south (the former advanced position) and the west, and began to advance in dense lines towards the redoubt and the trenches south of Khautschenpou. Their forward movement was checked by fire.

From 7 in the morning a terrible struggle for the Railway Redoubt and Khautschenpou began. The Japanese made assault

¹ One company of the Niejine regiment had been sent to this point the night before.

THE EXPERIENCE OF THE RUSSO-JAPANESE WAR.

TRANSCRIPT BY CAPTAIN W. L. J. CAREY, R.A.

("Journal des Sciences Militaires," April, continued from the February number, see "Journal of United Service Institution of India," October 1906.) It should be remembered that the French article is itself a translation from the original Russian.

The method of infantry action in the modern battle depends on the effects of its own and the artillery fire. We have already examined the artillery action, in the study of infantry fire it must not be forgotten :—

1. That the various rapid fire rifles with which all armies are provided have the same value for all practical purposes, from the point of view of battle conditions.
2. That neither the rapidity, nor the precision of the fire of the rifle in the hands of a *living* man can ever be sufficiently powerful to annihilate an adversary who is superior in numbers, and capable of renewed efforts. Nerves weaken, eyesight fails, strength decreases and apathy comes to the front; victory is to him who maintains his energy the longer, and is able to strike the last blow.

Great numerical superiority at the decisive point, in troops ready to take the offensive and well endowed with tenacity of purpose, will always compel success. The losses will be enormous, but *every* man cannot be killed. An intelligent obstinacy, conscious of its strength and sensible of the correctness and opportuneness of the dispositions made, is the gage of success.

The bayonet in the hands of a stout-hearted combatant has not lost its value, but it is employed more rarely than of yore.

INFANTRY FIRE.

Ranges and descriptions of fire.—Albeit with a very heavy expenditure of cartridges the present rifle confers the possibility of inflicting serious harm on the opponent at a range of 3,000 paces. But this fire can only be employed to attack a particular tract of ground, or animate targets of some extent, such as large bodies of troops, columns, convoys, working parties, etc.

At ranges of 3,000 to 2,500 paces, with well-adjusted sights, volley fire against columns begins to give excellent results, especially in regard to moral effect; the adversary who is firing is a long way off, is invisible, and losses have already commenced to occur.

From 1,500 paces down, as a rule, fire of lines of riflemen begins, that is, individual fire.

¹ During the time spent in the Shaho position our (Russian) regiments frequently and successfully employed section and half-company volleys, at 3,000 paces, against Japanese working parties.

In consequence of the efforts made by both parties to take cover targets for volleys no longer exist at this range. It is almost impossible to make out the targets, and sometimes even to indicate the points at which to aim.

Of course if an objective appears out of cover, advantage must be taken of the mistake (which will soon be rectified as quickly as possible, if necessary, by dispersed fire). This can only be done by using magazine fire, for there is no time for volleys.

From 1,500 paces downwards fire is *individual* throughout the attack, and it is always varying in intensity from magazine fire to a complete standstill under the direction of the leaders of the firing line, or on the *personal initiative* of the riflemen. The former direct the fire according to their observation of results, and the information furnished to them, probably by observers (posted in trees, on roofs, hills, etc.) the latter according to their own observations.¹

Opportunities which occur for firing on the enemy from a flank should never be neglected, usually this occasions great disorder in the troops so attacked, and compels them to reveal their position to the riflemen who are attacking them in front.

Once the ranges of a few points in the enemy's position have been obtained, it becomes possible to throw a hail of bullets into the latter; this is the usual procedure of the Japanese infantry in battle.

As the two sides draw nearer to each other, the objectives are more clearly discerned nervousness increases, and the firing attains a terrible intensity. The whistling of the hail of bullets, recalls the hissing of a gigantic cauldron.

To take aim accurately in the last 400 or 500 paces is far from easy, and usually the bullets pass over head and strike far to the rear.²

During this period the machine gun, being a machine, acquires enormous importance. It has no nerves to weaken, and it literally mows down the assailant's lines.

It is here that the source of the enormous moral effect of the machine gun must be sought. Its regular crack *calm* in the midst of the nervous roaring of the combat produces a very powerful impression.

Expenditure of ammunition.—The expenditure of cartridges is enormous. In the battles on the Sado, cases have been known of regiments much below strength. Like those of the 17th Corps, in the 28th and 29th September (11th and 12th October) firing away

¹ Here there was a great deal of error, and it is probable that the direction of the bullet was not the same in all great volleys in the latter part of the battle, in any case that there was a great deal of error.

² Here the error was not so great, and it is probable that the direction of the bullet was not the same in all great volleys in the latter part of the battle, in any case that there was a great deal of error.

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⁴ The error was not so great, and it is probable that the direction of the bullet was not the same in all great volleys in the latter part of the battle, in any case that there was a great deal of error.

200,000 cartridges in a single day. The 138th Volkhovski Regiment during the 30th September, 1st, 2nd, 3rd and 4th October (13th to 17th October) expended 1,920,730 cartridges.

Although no case occurred of the lack of ammunition becoming critical, still the possibility must be kept in view.¹ To avoid difficulties there must therefore be a state of exemplary order in the immediate rear of the position occupied, a carefully made distribution of sections and open roads² and no useless convoys.

Fire discipline ; observation of the ground and the enemy.—The accuracy and rapidity of fire of the rifle cannot, under the present invisible conditions of combat formations, be fully utilised except with the aid of a good service of observation. This is an indispensable condition.

The system of observing fire should be the same as for the artillery, though on a smaller scale. The riflemen themselves ensure the observation to the front for a short distance. During the lulls three or four observers should be detailed for each section.

But in addition to this all suitable points of vantage (trees, houses, eminences on the flank or to the rear) must be utilised to post a special man, with good binoculars.

It is of no consequence if these points are in the section belonging to another company or battalion.

It is only by unceasing observation that it is possible not to lose sight of the enemy, and to penalise his smallest mistakes.

Every officer must have *good binoculars* and, in addition, there must be three or four per company for the observers.

When the ground is open and clear for a long distance over 1,500 paces, volleys are preferable. At medium and short ranges with well-disciplined troops individual firing is more effective.

What has already been said in regard to artillery and infantry fire determines the general conditions of the modern battle.

The conditions are as follows:—

- (1) Only those portions of the ground which are completely hidden from the enemy's view can be considered as sheltered from fire.
- (2) The best means of diminishing losses is not to be seen, therefore open formations are a matter of course.
- (3) It is necessary to observe the enemy oneself with the greatest care.
- (4) A special reconnaissance, made by observers without losing sight of the enemy, is necessary, in order to act in accord with their reports, and above all to be able to conduct the manœuvring in a rational manner.
- (5) Wide initiative in fire discipline.
- (6) Enormous expenditure of ammunition.

¹ The expenditure of cartridges rarely exceeded 100 to 150 cartridges per man as an average for a day's fighting—(note by French translator).

² This is very important in intersected ground, and when it is raining.

ARRIVAL ON THE FIELD OF BATTLE.

Arrival in the zone of possible fighting.—In accordance with information furnished by the chief commander, and received from the patrols sent out by him to reconnoitre, or to enter into communication with the more advanced troops, if there are such, the infantry as they approach to within 5, 6 or 7 versts of the field of battle, abandon the columns of route in favour of massed formations, adapted to any existing cover, so as to withdraw from the view of the enemy's observers, and halt in rear of the said cover.

The commandant of the column as a rule then either reports himself to the senior officer in the section, if the fighting has begun, or goes out to reconnoitre.

Troops halted in temporary formation before taking the order of battle should without delay send out security posts to the front and flanks; their duty is to protect their own troops from all eventualities, to prevent the enemy's patrols from seeing anything, to reconnoitre the ground, to suppress spies (which were generally numerous in Manchuria among the local population) and to secure communications with neighbouring troops. The strength of these posts for a battalion and a regiment is one section, stiffened by six or eight dismounted and three or four mounted¹ scouts.

These posts go out to a distance of $1\frac{1}{2}$ to $3\frac{1}{2}$ versts,² intrench themselves, and organise the look out towards the enemy, and on the flanks. Patrols connect them with one another, covering the whole front and flanks of the troops which have sent them out.

Experience teaches that it is only after precautions such as these have been taken that a body of troops can obtain quiet and rest, especially in mountains or very close country, like the Manchurian kaolian.³ Lastly, when a detachment is operating alone, these posts, which are sometimes increased to a half-company or company, according to the circumstances and the ground, may be of the greatest service in the deployment for battle, forming firm points of support at which observation and communication is organised beforehand.

Entry into the zone of artillery fire.—In the zone of long range artillery fire, i.e., at 5 or 6 versts from the hostile artillery positions, battalions open out by companies, and companies march in line of sections by the flank, at 30 to 40 paces interval. If there is any natural cover, companies make use thereof without regard to distances or intervals, merely avoiding exaggerated extension⁴.

¹ The Russians organised a detachment of dismounted and another of mounted scouts in each regiment, with a strength of 100 odd men—(French Translator's note).

² 1 verst = 1,066 metres = 1,154 yards.

³ Without posts placed in this way 'at night they are similarly put out to the rear) surprise by rifle fire such as occurred more than once during the Russo-Japanese War, becomes impossible.

⁴ In hilly country it is not always possible to move by companies in the narrow depths of the valleys, but on the other hand there is always natural cover for bodies of considerable size. The method of passing from one bit of cover to another varies, with the lie of the ground, and the nature of fire to which the troops are being subjected; whole columns at a time or even single men.

This period is the end of the formations carried out in accordance with the reconnaissances, and with information supplied by the chief commander. Commanders of battalions and regiments now make personal reconnaissances.

The further movements of battalions take place in the same manner until the zone of rifle fire is reached (in open ground at 2,000 paces).

Companies cross open ground under heavy shrapnel fire by sections, or groups sometimes by single files, at a run. In these cases the officers go on ahead at the double, and the men rally to them.

During this period it is desirable that all mounted men (including officers) should dismount, for the reason that groups of horsemen are clearly visible and form a most useful mark for the enemy.¹

Companies march independently, without paying any attention to dressing. They mark time at convenient points for defence, in case the enemy takes the offensive, and halt for short periods, care being taken to consider the position of neighbouring companies, *i.e.*, that the latter are not occupying similar points a little to the front or rear.

This manner of forming line for battle ensures that the battalion (or regiment) is always in a position to repulse every attempt of the enemy to impede the offensive movement, and furnishes the possibility, in case of need, of gradually reinforcing the fighting line, under the protection of the fire of these companies, by means of small parties drawn from the reserve.

ENTRY INTO THE ZONE OF RIFLE FIRE; DEPLOYMENT OF COMPANIES.

On entering the rifle fire zone the battalion halts under cover, either in the firing position or immediately in rear thereof, observers being posted in the position to the extent possible. Commanders of companies go on ahead to reconnoitre their own section of ground and the terrain towards the enemy (they note favourable localities for halts, cover, suitable points from which to observe, etc.)

Thenceforward, if the ground still gives shelter from the view of the enemy's observers, the battalion continues its advance in the same manner, otherwise companies deploy into line of skirmishers.

On receiving the order to deploy, commanders of companies make known the lie of the portion of ground allotted to the company, and its extent, designate the sections to form the firing line, and despatch two or three patrols to the point indicated for the deployment. This is especially necessary where the advance lies through undergrowth or kaolian, when heights or isolated houses are to be occupied, etc. When the patrols give the signal for the advance, the commander of the firing line sends forward single groups. These

¹ Similarly all colours and standards should disappear (battalion, staff, etc.) These might very easily enable the ranging to be carried out.

² The same holds good with battalions but with still wider links.

groups advance, keeping under cover (so that the enemy may not be able to guess at the point of deployment, and find his range) towards the position indicated as their halting place, and extend to about 30 paces interval; they then examine the ground, choose a suitable line from which to fire, and lie down. The section commanders deploy their men in a sheltered locality, and then send them forward, either all at once, in groups, or one man at a time. The corporals mark the position of their squads; corrections of dressing, if necessary, are always unimportant, and will be carried out lying down. Care must be taken to avoid the traffic backwards and forwards which usually accompanies our (Russian) deployment. With practice the men do it very rapidly, and keep almost entirely under shelter from view.

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The advanced position of the Railway Redoubt, which was occupied by two companies of the Zaraisk regiment, and Khautschenpou was at the angle of a salient right angle. The occupation of these by the Japanese would have rendered it impossible for the 3rd and 35th Divisions to hold their positions. These facts attracted the attention of the Japanese on the morning of the 20th February (5th March). That morning and evening were passed in unsuccessful efforts by the 3rd Division to retake Ouentchenpou and Ingoua, the redoubt and Khautschenpou were bombarded by siege pieces in position on the other side of the Sha-ho.¹

During the night and morning of the 21st February (6th March) small groups of Japanese made attempts to penetrate the empty space between Khautschenpou (occupied by the Morchansk regiment) and the flank of the 3rd Division; the object being to facilitate the frontal attack by producing disorder with fire from the rear. But all these attempts were discovered, and repulsed by the fire of the Morchansk regiment.

At dawn of the 21st February (6th March) the Japanese again opened a murderous fire on the Railway Redoubt, on Khautschenpou and on Redoubt No. 1 with 6", 8" and 11" common shell.² The common shell were accompanied by shrapnel fire from the Sifontai and Ouentchenpou direction.

A particularly heavy fire was directed on the section from the Railway Redoubt to Khautschenpou. Within an hour and 20 minutes, 32 8" and 11" common shell fell in the redoubt, and 111 shell of various calibres burst between the redoubt and the village.

¹ Losses of garrison : 3 men killed, 1 officer and 38 men wounded.

² 15, 20, 28 centimetres the Russian inch is equivalent to 2·5 mm.;—(Translator's note).

The damage in the village was considerable. All the blindages were destroyed, the parapet was half scattered in the ditch, and the interior of the redoubt was strewn with clods of frozen earth. The garrison stood fast, although half the men were partially asphyxiated by the gases.

Towards 4 in the afternoon the Japanese directed an attack on the redoubt from the Ingoua side (from the siege battery near the redoubt and Sifontai). Their first attempt was repelled by fire from long ranges.

Towards 5 o'clock several companies were seen crossing from Ouentchenpou to Sifontai, in which the concentration for a fresh attack was evidently taking place. The batteries of the 35th Artillery Brigade having an excellent service of observation, and being connected by telephones with Khautschenpou, bombarded Sifontai very successfully. Columns were seen to disperse and take cover behind the village; at 2,000 yards the Morchansk regiment and the garrison of the redoubt added volleys to the artillery fire. The large number of black dots left on the field testified to the heavy loss sustained by the enemy.

Before nightfall another attack on the redoubt was repulsed; but the Japanese were close up, and the firing did not cease, even in the darkness. The garrison of the redoubt was reinforced by one company from the Morchansk regiment, and one company occupied the railway cutting opposite Ingoua, while two companies of the 10th Novo-Ingermanlandski regiment closed the interval between the 3rd Division and the companies of the Morchansk and Niëjine¹ regiments occupying the line south of Khautschenpou.

At nightfall a detachment of 20 Sappers was sent towards Khautschenpou to repair the redoubt, and a company of the Niëjine regiment brought 500 sand bags from Kaoulintoun. The parapet could only be partially repaired, the blindages had been destroyed by the bursts of the heavy shell, and it was impossible to reach the accessory defences which were almost ruined, as the Japanese opened fire at once at ranges of 100 to 150 yards (from the old siege battery).

That night, like the last, a hot meal was brought on donkeys to the point on the river north of Khautschenpou, and from there the food was taken to the men in the fighting line in their own cooking pots.

The firing continued all night.

Towards 5 o'clock in the morning of the 22nd February (7th March), the Japanese opened fire with redoubled vigour from the south (the former advanced position) and the west, and began to advance in dense lines towards the redoubt and the trenches south of Khautschenpou. Their forward movement was checked by fire.

From 7 in the morning a terrible struggle for the Railway Redoubt and Khautschenpou began. The Japanese made assault

¹ One company of the Niejine regiment had been sent to this point the night before.

after assault, but their dense lines were annihilated by uninterrupted magazine fire, and they halted. The reserves, which followed, similarly deployed at wide intervals, were promptly welcomed (the observers transmitting the information by telephone) by "rafales" of shrapnel from the four batteries of the 35th Artillery Brigade.¹

Towards 10 A.M. the fire of the Japanese siege ordnance and 11" guns reached its maximum intensity; and a hail of 6", 8" and 11" projectiles, accompanied by "rafales" of high explosive shell and field shrapnel was launched against the railway and No. 1 Redoubts. The bombardment continued without intermission till 11 in the morning. Thick, stifling smoke and clouds of dust, caused by the bursting shell, completely enveloped the redoubts and the village of Khautschenpou.

Making use of this screen, the Japanese concentrated in the trenches at 50 or 60 yards from the Railway Redoubt, and in the siege battery.

At 11 o'clock the artillery fire *ceased suddenly*. The smoke and dust had not dispersed before the Japanese threw themselves on the ruined redoubt from three sides at once, and jumped into the outer ditch (the accessory defences had been almost entirely destroyed in the course of the three days); from there they hurled hand grenades into the interior of the redoubt. The scanty remainder of the little garrison, deafened and suffocated by the gases, abandoned the redoubt gradually, and retired, under the protection of the company from the Morchansk regiment, to the Khautschenpou trenches.

The losses of the garrison were:—

Date.	KILLED.		WOUNDED.		BRUISED.		Missing men.
	Officers.	Men.	Officers.	Men.	Officers.	Men.	
21st February (6th March) ...	1	21	2	35	1	6	...
22nd February (7th March) ...	...	35	1	60	...	5	15

In three companies very much below strength there were a total of—

Killed	1 Officer	56 men	} Total 5 officers. 177 men, i.e., nearly 50 per cent.
Wounded	3 "	95 "	
Bruised	1 "	11 "	
Missing	...	15 "	

After occupying the redoubt, the Japanese without delay mounted some machine guns in it and the railway barracks, which

¹ The following places were out of reach of our fire; the village of Ingoua, the interior of the siege battery, the advance works near Ingoua and the sharp bend (700 or 800 yards away) in the stream flowing from Khautchen to Ouentcheonpou.

were of the greatest service to them against our Russian counter-attacks.

To finish up, we may say that meantime the order arrived for all troops of the III army to fall back that evening on Mukden. The attack on the redoubt (by the Russians) was therefore not pushed home.

The fight we have just described furnishes some remarkable examples:—

On the one side a brilliantly obstinate resistance; under fire from guns which even the concrete cover did not resist, a position in the form of a right-angled salient is held for three days against superior enveloping forces. On the other side, a brilliant attack, taking no count of losses; an intelligent use of every fold of the earth; the employment of any means which might facilitate the assault (large calibre ordnances, hand grenades and machine guns¹).

The bayonet.—The *bayonet* in the hands of our brave men has not lost its value. I will not quote instances at Port Arthur, I will simply say what I saw with my own eyes.

Our regiments did splendid work with the bayonet at Liao-yang (Sakhoutoun Hill). On the 28th September (11th October) the Morchansk regiment and two battalions of the Zarsk took the village of Endonioulou by a night assault, without firing a shot, and killed more than 1,500 Japanese belonging to the 33rd regiment.

Man remains what he was—he has feelings and nerves. As a proof we may quote the exploit of Lieutenant Stepanenko of the 140th Zarsk regiment.

The 140th Zarsk regiment was holding a nameless village near Khakhountai and Chaudiasa on the west front of the entrenched camp of Mukden; it was attacked on the morning of the 23rd February (8th March) from the Lioudiaofan side.

The assailant was allowed to approach to 500 yards, and then received with fire from rifles and two machine guns. The dense lines of the enemy fell back in disorder towards Chaudiasa, leaving heaps of dead and wounded on the field. It soon appeared that a number of the Japanese thus repulsed, either with the idea of obtaining shelter from the murderous fire, or of renewing the attack, had thrown themselves into the Chinese tombs to the right and a little in front of the unnamed village. Half an hour later rifle fire from the direction of the tombs took the Zarsk regiment's position in flank, and considerable disorder ensued; for, in addition to the losses, all communication in the village was stopped.

Attempts were made to dislodge the Japanese first by volleys, and then with the machine guns, but without success. The cemetery was surrounded on three sides by banks of earth, and afforded the Japanese a ready made shelter. Its fourth and open side was to the west. Towards 11 o'clock, the officer commanding the line of scouts

¹ Under the eyes of the Khautschenpou garrison the Japanese pierced embrasures in the walls of the barracks. Bullets and shrapnel made the splinters fly, but the Japanese continued their work under cover; we could not prevent them.

Lieutenant Stepanenko, asked the officer commanding the regiment for permission to drive out the Japanese holding the cemetery.

After hearing Lieutenant Stepanenko's plan, the Colonel gave the required permission.

Lieutenant Stepanenko took with him 60 volunteers from his own detachment. To begin with, he sent 10 men on in front. These advanced independently by creeping, and, thanks to utilising the smallest inequalities of the ground, approached very close (200 to 300 yards) without being noticed, and then opened a heavy fire.

This unexpected eventuality attracted the attention of the Japanese, and they concentrated their fire on these ten warriors, whom they could only see with difficulty.

Taking advantage of this, Lieutenant Stepanenko sent forward the remaining 50 Volunteers at the double, to the left flank of the cemetery, and went with them himself. As soon as the 50 men had siezed some points of vantage, Lieutenant Stepanenko ordered magazine fire on the Japanese who were busily engaged in firing elsewhere. The firing threw the Japanese into a disorder easy to understand. At this moment three scouts reported that a small slope behind the cemetery had not been occupied by the Japanese. Twenty out of the 50 men were despatched to it without delay. It was agreed that, on the order "Company" which the Lieutenant would give, to make the Japanese lie down in anticipation of a volley, these men would charge with the bayonet.

The calculations proved correct; the Japanese lay down, and at that moment the 20 men threw themselves upon them with cries of "Hurrah," while the other 30 continued to fire on the flank of the cemetery. The Japanese, who were at first dumbfounded by this attack in rear, changed front to repel it with rifle fire. Then Lieutenant Stepanenko and his 30 scouts charged with the bayonet.

A wholesale panic took possession of the Japanese holding the cemetery. In vain did their officers beat them with the flat of their swords. All fled except a handful of brave men who accepted the challenge to a bayonet fight.

The companies and machine guns were awaiting this moment, and their fire completed the rout of the flying men; out of 500 to 600 men not more than 70 escaped.

Our trophies were 14 officers' swords, 400 rifles,¹ 85 unwounded or slightly wounded prisoners, a large number of cartridges and some maps.

In this glorious affair the scouts suffered but insignificant losses, 2 killed with the bayonet and 6 wounded.

The enterprise began at midday and was over by 1 P.M.²

This case shows that with a well conceived plan and a determination to see it through to the end, success is always possible, and bayonet charges not less so.

¹ These arms were handed over to the artillery at Mukden.

² Lieutenant Stepanenko's reward for this feat of arms was the St. George's Cross of the 4th class.

The principles to which history has given birth and which have been adopted by tactics remain ever the same. Those who followed them were successful, even in the Russo-Japanese War; when they were contemned, punishment ensued. The essential point is an intelligent and well-considered plan. Without a plan—neither dash, nor the bayonet, nor heroism can bring success.

Experience shows that the following modifications are necessary in regulation procedure:—

Intervals between scouts (firing line).—The intervals in the chain should be at least $2\frac{1}{2}$ to 3 paces, which gives a front of 120 paces to a section, and 200 to 240 for a company with two sections deployed, or 300 if there are three.¹

A line of slight density is the best means of guarding against the effect of present day infantry and artillery fire, because this formation lessens the losses, and at the same time diminishes their moral effect.

At the same time the efficiency of the fire increases, the men are cooler in mind (fewer losses and less visible suffering of wounded comrades) and adopt themselves better to the ground. The rapidity of fire of the rifle allows of fully making up for the smaller number of riflemen, which is a result of the larger intervals.

The endurance (capability of renewed action) of the company is not weakened, even to a slight extent; because the long range and accuracy of the rifle, combined with the rapidity of its fire have considerably increased the relative possibility of mutual support by fire, in comparison with former arms.

These conditions (fewer losses and greater coolness) facilitate the control of the firing line and also of the whole company.

Forward movement, combination of fire and movement.—The *forward movement of the chain* is for choice carried out by all sections of the company, at the same time, under the protection of the fire of another company, which is already in a suitable advanced position.²

The direction is better maintained when the movement is carried out by the whole company at once. During halts the firing can be regulated as desired by the officer commanding the company, and the control of the line remains in the hands of an officer.

When the movement is made by sections, not only is the direction too easily changed, but also the firing is seriously affected. The lack of coolness in the commanders of sections results in their sections rising, and going forward before the next section is able to install itself firmly on the new line taken up, and open fire. This haste prevents unity in the offensive movement; the firing does not

¹ At Lioutkanghou on the 29th September (12th October), a battalion of the 137th regiment with three companies (one was in reserve) occupied a front of 1,160 paces.

The Morchansk regiment, 900 strong, at Linohinpou successfully defended a section of about 2,000 paces.

² From which this company can fire on the section of the enemy's position next to that in its own direct front.

attain the desired and looked for intensity, and it becomes more haphazard.¹

Forward movements without firing, even if the existence of cover permits, *should not be allowed*.²

From the point of view of fire the attacker will never have advantages equal to those of the defender. Accordingly, if he does not shatter the latter's nerves with long range fire (mass firing as aforementioned), the attack will be unsuccessful.

In the present condition of the means of destruction the object of the preparation for the bayonet shock should be to place the enemy's rifles in a state of powerlessness for harm. The enemy's nerves must be worn out, and the accuracy of his fire paralysed by fatigue, and continued losses. For this purpose time and heavy mass firing is a necessity. It is not necessary to hurry the advance. Full advantage must be taken of all favourable situations for fire action. Otherwise the attack will be repelled even if the enemy only discerns the attacker at 100 yards.³

To repel the Japanese attacks our procedure often was to allow them to come up to 500 yards, and even nearer, and then they were shot down with deadly certainty by heavy mass firing. With the same idea in night attacks they were allowed to approach to 200 yards, and even less, when there were accessory defences.

Of course in attacks when surprise is the predominant feature there cannot be any question of preparation by fire, any more than formerly.

The brilliantly successful night attack carried out by the Morchansk regiment, and two battalions of the Zaraisk on Endoniouniou on the 28th September (11th October) 1904, furnished a good example. These brave battalions annihilated the whole 33rd Japanese regiment with the bayonet,⁴ and without firing a shot. The attack was made in such unexpected fashion that some of the garrison had not even time to unpile the arms, which were captured filed as they stood.

Service of security on the field of battle.—The security of the flanks of the battle formation should be fixed, and should consist of strong guards in advance of, and level with, the reserves. These flank guards send forward a chain of *fixed posts* connected with one another by patrols in the direction ordered. The guards communicate

¹ It may be permitted to remark that this observation is another proof of the lack of confidence in the tactical sense of section commanders already shown by the author.

With good section commanders this contention falls to the ground—(Translator's note).

² Except, it should be understood, cases in which a bayonet charge can be undertaken immediately.

³ Analogous cases to that of the exploit narrated about Lieutenant Stepanenko do not abrogate this view:—

1st.—Because on that occasion the enemy had been already shaken by the failure of his first attack.

2nd.—He was surrounded on three sides.

3rd.—The charge with the bayonet was unexpected.

⁴ In the morning 1,700 corpses were counted.

with the staff of the troops by telephone, or by mounted men posted at short intervals.

This method of taking precautions removes all possibility of the *unexpected* appearance of an enemy on the flank or of an *enveloping movement*. Mounted men (mounted scouts of infantry, dragoons or cossacks) allotted to these flank guards enable them to see beyond the line of posts, and to protect themselves against unexpected happenings. The main body of the flank guard should strengthen its position with field works as soon as possible.

A fixed service of security presents enormous advantages over reconnaissances from the observation point of view :—

1. The observing is carried out from specially selected and convenient points.
2. It is not interrupted.
3. The opponent cannot avoid the posts, even if he has not been perceived at first.
4. The communication can be more complete.
5. The fixed service of security is of itself capable of fighting (entrenched main body of the flank guard).

It is understood of course that protection against a turning movement at a great distance falls to the share of specially detailed mounted troops.

The advantages of the fixed service of security was specially evident in mountainous regions.

At the affair at Tsofantoun on the 16th (29th) August 1904, the detachment of mounted scouts belonging to the 139th Morchansk regiment, which had occupied the neighbouring heights of Chikhouietsa and Sandiatza, was so successful in observing the Japanese debouching from Tchaudiapousa and Pandiapou that it reported the smallest bodies of Japanese troops; and in consequence of its information the artillery of General Mitschenko's detachment, which was in action near Taiertoun, was several times enabled to shell a Japanese battery trying to get into position; and the batteries of the 35th Artillery Brigade, posted in a hollow south-east of Tsofantoun, successfully shelled the enemy's infantry.

Here are some examples of information furnished by the scout detachment :—

1. Hostile mounted scouts (9 men) have appeared near Souitchve. Single men are occupying the ridge near the villages of Tchandiapousa and Pandiapou. On the neighbouring ridge of Intaouioan groups of 20 or more of the enemy are visible, they hold the place as far as hill 6. Near slope 78 next to the Kheinioutchouan village several companies of infantry were seen advancing to Liaoyang. There are probably large bodies of troops there. I am staying on the peak near Chikhouietsa.

(Sd.) VASILIEV, LIEUTENANT,
16th (29th) August, 8 a. m.

2. A squadron of the enemy's cavalry has arrived at Chikhouietsa, and halted on the south edge. On the right (to the east) the

suffered is obtained by the fortuitous choice of the point to be attacked, and its influence on the general situation.

As we have already said, the rifle in the hands of a *levy en masse* man ends by losing its great power, and ceases to be a fatal menace to everything that appears before it.

EXAMPLE OF REPEATED ASSAULTS FINALLY CROWNED WITH SUCCESS

The following is a reliable description of the Japanese assaults on the 22nd February (7th March) 1905 on the redoubt known as the Railway Redoubt on the line between the villages of Khautschonpon and Ingoua.

During the nights of the 19th February (4th March), 20th February (5th March) the III Army had changed front and thrown back its right wing. The 35th Infantry Division was in its section between the railway and the line Beizumanna Kaoulintoun. The 3rd Division was stationed on the railway between the station of Sonatoun and the village of Khautschonpon though not reaching quite as far as the latter. The strongly fortified villages of Ingoua and Sonatoun, the interval between them and Ouentchenpon had been abandoned without firing a shot.

The advanced position of the Railway Redoubt which was occupied by two companies of the Zurausk regiment, and Khautschonpon was at the angle of a salient right angle. The occupation of these by the Japanese would have rendered it impossible for the 3rd and 35th Divisions to hold their positions. These facts attracted the attention of the Japanese on the morning of the 20th February (5th March). That morning and evening were passed in unsuccessful efforts by the 3rd Division to retake Ouentchenpon and Ingoua, the redoubt and Khautschonpon were bombarded by siege pieces in position on the other side of the Satchi.

During the night and morning of the 21st February (6th March) small groups of Japanese made attempts to penetrate the empty space between Khautschonpon occupied by the Manchuk regiment and the flank of the 3rd Division, the object being to start the frontal attack by pushing grenades with fire from the rear. But all these attempts were discovered and repulsed by the fire of the Manchuk regiment.

At dawn of the 21st February (6th March) the Japanese again opened a murderous fire on the Railway Redoubt on Khautschonpon and on Redoubt No. 1 with the 8, and 11 inch guns. The 11 inch guns were accompanied by snipers firing from the Satchi and Ouentchenpon redoubts.

A powerful heavy fire was directed on the section from the Railway Redoubt to Khautschonpon. With ammunition of 120 millib., 12.8, and 11 inch guns and 120 millib. and 111 millib. of various calibres burst between the redoubt and the village.

¹ The Japanese were not able to penetrate the redoubt. The Japanese were not able to penetrate the redoubt. The Japanese were not able to penetrate the redoubt.

The damage in the village was considerable. All the blindages were destroyed, the parapet was half scattered in the ditch, and the interior of the redoubt was strewn with clods of frozen earth. The garrison stood fast, although half the men were partially asphyxiated by the gases.

Towards 4 in the afternoon the Japanese directed an attack on the redoubt from the Ingoua side (from the siege battery near the redoubt and Sifontai). Their first attempt was repelled by fire from long ranges.

Towards 5 o'clock several companies were seen crossing from Ouentchenpou to Sifontai, in which the concentration for a fresh attack was evidently taking place. The batteries of the 35th Artillery Brigade having an excellent service of observation, and being connected by telephones with Khautschenpou, bombarded Sifontai very successfully. Columns were seen to disperse and take cover behind the village; at 2,000 yards the Morchansk regiment and the garrison of the redoubt added volleys to the artillery fire. The large number of black dots left on the field testified to the heavy loss sustained by the enemy.

Before nightfall another attack on the redoubt was repulsed; but the Japanese were close up, and the firing did not cease, even in the darkness. The garrison of the redoubt was reinforced by one company from the Morchansk regiment, and one company occupied the railway cutting opposite Ingoua, while two companies of the 10th Novo-Ingermanlandski regiment closed the interval between the 3rd Division and the companies of the Morchansk and Niéjine¹ regiments occupying the line south of Khautschenpou.

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From 7 in the morning a terrible struggle for the Railway Redoubt and Khautschenpou began. The Japanese made assault

¹ One company of the Niejine regiment had been sent to this point the night before.

enemy has pushed back the cossack posts, so much so that I have withdrawn the detachment to the north of Chikhouietsa. I am continuing to observe this cavalry. I believe I see infantry in the Chikhouietsa valley. The enemy's scouts have already climbed the rising ground near this village.

Sent by the same officer, 10 A.M.

3. Some small bodies of the enemy's infantry, a section or half company strong are crossing the valley of Chikhouietsa from west to east, probably on the road from Finsiangoou to Siansandsa. I have seen six pass by. The enemy's scouts are visible along the whole front, advanced guards at 800 or 1,000 yards. I await orders remaining in my former position.

Sent by the same officer, 11 A.M.

The first line to be occupied by the posts is indicated by the staff of the detachments or division. This staff should afford the commander of the troops which ensure the security of the flanks¹ as much information as possible on the situation, and explain to him clearly and precisely the section to be watched by him, or the new line to occupy if a change² is feasible.

It is the business of the staff to select and secure the means of communication between itself and the service of security.

Good binoculars are indispensable.

Remarks by the (French) Translator.—To sum up, the following points stand out clearly from the foregoing observations:—

1. Fire alone is incapable of causing the abandonment of a firmly held position; the defence only falls before an energetic offensive, and an advance pushed to the assault, often occasioning the use of the bayonet.

2. By employing lines of slight density and making full use of the ground, the attacker can always advance towards the position to be taken, and succeed in concentrating sufficiently large numbers close up to enable him to execute an assault.

The advance to short ranges necessitates the previous acquisition of superiority of fire.

4. This superiority of fire must be maintained by the employment of heavy fire in all favourable positions, entailing an enormous expenditure of ammunition.

5. At the shortest ranges the firers are so nervous that firing becomes wild and losses are very slight.

6. An attack pushed home will involve serious losses, but it will always be possible, as in the past.

7. The occupation of a wide front by a unit engaged has the result of diminishing, not only the losses, but also their moral effect.

¹ It is necessary to fix in his mind the position of the troops nearest to him on the flank which he has to cover, particularly that of the artillery. Information reaching the latter at an opportune moment may be of the greatest service.

² In case of a movement to the front or a retirement. The main body of the detachment throws out fresh posts, the old posts fall back and rejoin the main body.

MILITARY RECONNAISSANCE.

BY MAJOR E. POTTINGER, R.F.A.

The necessity for a knowledge of Military Topography amongst all Officers is emphasised by their being required to pass examinations in this subject before they arrive at Field Rank, and yet how many Officers say "What's the good of my sketching, I can't draw and would never be required to do it on service." They fail to realise that unless they learn and practise the principles of Military Topography they will be unable to grasp the value of the information contained in a reconnaissance made by some other Officer.

Drawing, like music, is an art to gain proficiency in which one must possess an instinctive talent or taste. A man may have no ear for music, but he may be taught to play mechanical tunes on a piano; similarly, however bad a draughtsman may be from an artistic point of view, he can be made to learn the mechanical parts of Military Topography, and yet it is those Officers who complain that they are unable to draw who are given to placing the north point in the wrong direction and making an incorrect scale on their sketches. You may take a man out snipe shooting, but unless he is fond of sport he will never make a good bag; similarly, those who think they can't draw, when called upon to make a sketch, take no interest in their work and do not try.

Our present system of training aggravates this evil. Those who are capable of making a good and useful sketch regard the annual reconnaissance as a troublesome waste of time; those who have no aptitude for the work look on the matter as a farce and undoubtedly in many cases fudge their work. No distinction is made between these two classes. To quote my own experience. After two years of nearly continuous field work in China, firstly, with a Railway Reconnaissance and afterwards with the China Field Force, I returned to Ireland and was promptly ordered to make a ten-mile route sketch between Clonmel and Clogheen. How could I be expected to take any interest in this sketch?

To quote one more example. Some fifteen years ago orders were received to make a ten-mile radius sketch round a new Frontier post. Five Officers were deputed for this work and each was given a sector. Two of them enlarged an old existing map to the necessary scale, the five sectors were then pasted together and the map submitted to headquarters and printed, and this still remains the only existing map of that station, yet parts of it are hopelessly inaccurate.

Formerly when an expedition was sent to unexplored countries, it was of the greatest assistance to the staff to have a large number of officers whom they could call on, if necessary, to make sketches, but now that Frontier Surveys have been extended there are very few possible theatres of war of which we do not possess fairly accurate

maps. Such being the case, is it now necessary when an Officer has learnt sufficient Topography to enable him to read and grasp the details of any map, to compel him annually to make a route or position sketch for which he has no aptitude? Would it not be better to instruct him in some more useful form of Reconnaissance? This subject comprises considerably more than mere map-making, but practical report-writing is seldom practised in peace. Commanding Officers when satisfied that the juniors have thoroughly mastered the principles of Military Drawing should practise these Officers in such forms of Reconnaissance as they might be called on to perform on service. The results which they could then submit to Brigade or Divisional Headquarters would be of some practical utility and not consigned like the present annual sketches to the waste paper basket.

Take, for example, a Regimental Officer required on service to make a reconnaissance of a road, river, position or even a large tract of country. He would first of all obtain any available maps and from them mark on his paper (enlarging, if necessary, to the required scale) the most prominent features and land marks; and, having made notes of any existing information, would then start out to verify and amplify what was already known, but how often do we see this practised in peace time?

How many Officers have any idea of rapidly estimating the amount of available supplies in a district. If they arrived at a large village with a few native shops, they could not estimate whether there was sufficient food grains to feed a Regiment or a Division. Similarly, with standing crops, how many could give the probable acreage of a field by looking at it, or estimate the amount of corn in a ripening wheat field, or how many thousand pounds of kurbi could be procured from a crop of standing jowari; and yet on service this is the sort of information that a Reconnaissance patrol might well be expected to obtain. Intelligence reports collected on Manœuvres and Staff Rides abound with the expressions "little" and "plenty" when referring to supplies. Vague terms such as these are almost useless, but what else can we expect if Officers are never taught how to make rough estimates of quantities.

Attention has been drawn to the lack of accurate military maps in the neighbourhood of stations. Ordnance maps certainly exist, but many of them are old and do not show the newer roads and canals, while none of them contain purely military information. We have Route Books (many of the routes in which are hopelessly inaccurate and out of date), Military Reports on Railways, Civil Gazetteers, etc., etc., in fact a vast amount of information scattered through many publications. What is now required is that this information should be compiled and condensed in such a form that each sheet of the Ordnance Survey would have attached to it a compact Military Gazetteer, and Regimental Officers, instead of making useless annual sketches, might profitably be employed on this work.

As a concrete example of the necessity for some form of Military Gazetteer affecting a certain area, we will consider a tactical scheme issued to Field Officers of the Karachi Brigade.

The theatre of operations includes that part of Sind from the sea to the 26th degree of Latitude. In order to write an appreciation and draw up a plan of operations, the following information must first be collected:—

1. Particulars of the various routes.
2. Particulars about the Railway, including embankments, bridges, workshops, rolling stock, etc., etc.
3. Particulars about the River Indus and the probable number and size of boats that would be available.
4. Nature of country, nature of crops and dates when sown and reaped.
5. Climatic conditions and water-supply, particularly in those districts not traversed by main routes.
6. Particulars about canals, and for what period the non-perennial ones contain water.
7. Size and population of chief villages, amount of supplies, camels, carts or other transport available in each district.

To assist us in collaborating this information we have an old and out-of-date Route Book, the Sind Gazetteer, dated 1876, the Military Report on the Railway, and are dependent on Civil Officers to supply us with the greater part of the information which is most necessary for Military purposes.

In the event of war on a large scale on the Indian Frontier, we must be prepared for local risings and disturbances within our own territories, to act rapidly against rebels and to suppress a rising before it has assumed formidable proportions is of the utmost importance, and the work of a Flying Column detailed for such a purpose would be greatly simplified if they possessed a map with accurate and detailed information of the district in which they were called upon to act.

The compilation of Trans-frontier information is carried out by the Intelligence Branch of the Headquarter Staff, but the duty of compiling information within our own frontiers might well be delegated to Divisional Commands, but in order to secure uniformity this work must be done in a systematic manner. Like the Ordnance Survey there would be no finality, but year by year additions and corrections would provide us with accurate and up-to-date Military reports. In advocating any improvement in our Military system the most important factor to be considered is expense. The following suggestions are therefore put forward for carrying out this work with a minimum of expenditure.

The Ordnance Survey Sheets, scale 1 inch to a mile, are available for practically all parts of India.

Working from Divisions through Brigades, each unit would have a certain number of these sheets allotted to them. Officers Commanding units, instead of having to send in yearly Reconnaissance sketches from

all Officers under Field rank, would be required to return these sheets corrected up to date with a compilation of Military information as a result of the season's work; each year fresh sheets would be compiled or such additional information added to existing sheets as was previously deficient. In this manner Officers would not only master the details of the surrounding country, but would also learn by constant practice the essential points to note in compiling a Military report, and those who were unable to draw would take more interest in work which they knew was of practical value and which they might be called upon to carry out on service.

While in the vicinity of cantonments Officers would be put to no extra expense. On going further afield Government transport, when available, could be used. On more remote districts shooting leave might be granted on some liberal basis, *e.g.*, an Officer wants to go for a week's shooting in some district which is four days' journey from his station, allot him work that will occupy him fifteen days and allow him to go away for a month, this to count as absence on duty provided his work is satisfactory. Many Officers would certainly pay their own expenses if they were allowed to go away for shikar under these conditions. Camps of Exercise, Staff Rides and Regiments marching in relief could be utilised for further extensions, and it would then only be necessary to pay Officers their travelling expenses for such districts as cannot otherwise be reported on. So much for the Regimental Officer.

In every Command there are a certain number of applicants for Staff employ. Before the names of these Officers are sent forward they should be attached for two or three months' duty to the Brigade Staff and be employed in checking the maps and reports sent in by units, and adding to them such information as is procurable from the civil authorities. (Police Officers and other civilians during their cold weather tours collect a large amount of information which would be exceedingly useful for these reports, but owing to lack of co-operation this is at present wasted.)

The minor details of information accompanying the 1 inch sheets might then be omitted and a more condensed report compiled for maps 1 inch to 4 miles, for submission to the G. O. C. Division. Officers attached to the Divisional Staff might further condense this information into a form suitable for maps on the scale of 1 inch to 16 or even 32 miles. The small scale maps with report would be useful for studying strategical problems, whereas the larger scale maps could be used for tactical operations.

By this method each Division would in time possess a map with a complete Military report which, year by year, was being corrected and brought up to date, and would be in possession of information which at present can only be obtained by searching among the archives of the Civil Secretariats.

REVIEWS.

Western Thibet and the British Borderland.

**By Charles A. Sherring, M.A., F.R.G.S., I.C.S., Deputy
Commissioner of Almora.**

This book gives an account of a journey by the author through that portion of Thibet which lies north of the north-west corner of Nepal. All controversial matter has been avoided. The author possesses a fund of dry humour and writes in a manner to interest his readers. The book is extremely well got up and contains no less than 175 photographs besides maps. Judging from the pictures the people of Western Thibet are not at all unlike the inhabitants of the Chin Hills, and it is a curious fact that the Chins used to employ a rope bridge similar to that shown on pages 18—24, in crossing the Manipur river before the *Sirkar* took the country over and built a suspension bridge in lieu.

The author was accompanied by Dr. T. G. Longstaff, a member of the Alpine Club, who contributes, in addition to 64 photographs, an exciting account of an attempt to climb Gurla Mandhata "probably the highest mountain in Thibet." This mountain, which attains an altitude of over 25,000 feet, lies immediately south of the sacred lakes of Mansarawar and Rakas Tal. The intrepid climber and his two guides had the unpleasant experience of being carried 1,000 feet down the mountain side by an avalanche.

A chapter is devoted to Gartok and it may interest the general public to know that the place boasts a race course, but racing is at present out of favour. "Nowadays mounted retainers are stationed near the winning post to prevent any but the Garphan's ponies winning."

Altogether the neighbourhood of Gartok is interesting. There are inhabitants near it who eat wild horses. There are no fowls! The women must be very accomplished if the Tarjum's wife depicted on page 299 is a fair sample. We notice that one of her feats—riding astride—is coming into fashion across the border!

Perhaps the most interesting chapter is No. XIII, on religion and Government in Thibet. Altogether there is a mine of information in the book and we take the opportunity of bringing it to the notice of the Intelligence Branch, although Western Thibet is not likely to become a theatre of operations for many years to come. We congratulate the author on his very excellent work.

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In the preface the author claims to have done his best to present the stages of the development of tactics in both its branches—the one relating to the actual formations of troops when near the enemy and allied to questions of drill, discipline and training—the other being generally known as grand tactics. The author hopes that he has arranged the facts and opinions contained in the volume in such a manner as to render the subject readable to British Officers.

The book contains 23 chapters with 27 plates. The latter often contain more than one plan and these plans again often show more than one or two stages of a battle. The book has therefore had a great deal of work put into it and should be a valuable one to all officers studying tactics. In reading the table of contents one is struck by the fact that only six chapters (about one-fifth of the whole book) are devoted to the period up to and including the Peninsular War, while the remaining 17 chapters deal with the events of the last 50 years or so. Again, no less than eight of these 17 chapters (about one-third of the work) are devoted to the period 1866—71.

We have always understood that the era of Modern War began with Gustavus Adolphus, and we think it is a pity therefore that the author did not begin his examples with a battle from that Monarch's reign. At Breitenfeld Tilly attempted on a smaller scale very much the same manœuvre as Frederick carried out at KOLIN and was beaten just as Frederick was.

We commend the author's closing paragraph to those who are afraid to militarize the nation. "And in Man there is the spirit that leads to victory or that leads to defeat. That spirit is the outcome of his environment and of his education from the very cradle."

Lessons of the Russo-Japanese War. By Général de Négrier.

Translated by E. Louis Spiers, 8th Hussars.

This book has been submitted to and approved by General de Négrier. The deductions from the war drawn by this distinguished officer must carry great weight and should be read by all. There are a few inaccuracies in the text, such as the statement that General Nogi won the battle of KINCHAU (NANSHAN). It will be a matter of great satisfaction to the whole British Army to know that General de Négrier considers that the lessons of the South African War have been conclusively corroborated by those of Manchuria. Our late opponents in South Africa will be interested to hear that the Russians have adopted the word "Commando" and use it in the same sense as the Boers did. The remarks on Cavalry amply vindicate Lord Robert's preface to Cavalry Training, 1904. It is stated that in spite of its defects the Russian Cavalry is far in advance of that of the rest of the Continent, and that no European Cavalry would have carried out Mistchenko's raid any better than he did. Cavalry must have howitzers or light mortars in order to

reduce field works and must be armed with the bayonet. According to the author it was the action of the Japanese Cavalry which decided the battle of Mukden—not by shock tactics but by its mobility. In fact the author is undoubtedly against shock action to which he applies the word “obsolete,” and would turn all Cavalry into Mounted Infantry. He talks about “the old school’s abnormal infatuation for military tournaments, polo matches, races and the like with its ill-concealed contempt for shooting.” The latter remark no longer applies to British Cavalry as the latest musketry returns can show. We wonder what British Cavalrymen will say to the statement that they “already begin to realise that in battle Cavalry must now act as Infantry.”

As regards Artillery the old cry for weight of metal is again heard. Observation, indirect fire and cover are all touched upon.

The Infantry has only a small paragraph specially devoted to it. More night work—a lighter load—the latter to include a trenching tool and some sort of sleeping shelter or *tente d’abri* are advocated. A vivid account of one of the Japanese assaults at Liaoyang should be read by all officers.

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6th Edition, revised and corrected up to July 1906.

(Aldershot—Gale and Polden.)

[REVIEWED BY D. J. A. GENERAL, WESTERN COMMAND, POONA.]

We welcome a new edition of this work which, in common with many others, we regard with gratitude, dating from the time when, as a condition of promotion, we wrestled with the most dismal but most necessary subject of Military Law.

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If we might suggest an improvement for a future edition, it is that references to the *official* manuals and regulations be inserted after the answers. Examination, being now conducted “with books,” facility in referring to the official volumes (which alone are permitted to be used) is of importance, and can only be acquired by practice.

The Indian Articles of War with Notes.

By Major H. C. B. Dann, lately Offg. D.J.A.G., Northern Command, etc. 3rd Edition. (Madras, Higginbotham and Co., 1906.)

[REVIEWED BY D. J. A. GENERAL, WESTERN COMMAND, POONA.]

Among the many annotated editions of the Indian Articles of War which have appeared since the issue of the revised articles in 1895 none bears, and deservedly so, a higher reputation for accuracy and general usefulness than that of Major Dann. Recent amendments in the articles and the issue of Rules of Procedure under article 190 in 1899, as well as the revision of Indian Army Regulations which made all references in the original edition to paragraphs of these regulations misleading, have rendered this new edition necessary. In it references to the Rules of Procedure have been inserted and the notes otherwise brought up to date. The result is on the whole excellent, but in some cases, where the Rules of Procedure have superseded older orders or rulings, it would perhaps have been better if the author had entirely rewritten his note instead of inserting the new reference in the old note which it either contradicts or modifies. Instances of this are to be found in the notes to articles 174 and 176.

If any work of this kind is carefully checked a few minor errors will always reward the diligent searcher. The present book (though not immaculate) is however singularly free from such errors, while in important matters it can always be relied upon. The author's information as to the powers held under their Court Martial Warrants, by General and other Officers Commanding Divisions and Brigades, is apparently not quite up to date and references to such matters in the notes should be received with caution. This, however, only concerns a few Staff Officers who will naturally consult the warrants themselves when any difficulty arises.

Major Dann has brought his very useful series of examination papers (with answers) up to October 1905. This is for candidates preparing for promotion and other examinations, the best part of the book. In this connection a word of warning to such may be useful. The articles are (see cover) printed as modified up to *December 1904*, and the paper for October 1905 has been answered *on them, i.e.*, the answer to the second question on page 234 would be different if the amendments made by Act V of 1905 had been considered. We do not agree with Major Dann's answers to the questions set in March 1905 regarding the positions of Imperial Service Troops and the law as to the convening of Court Martial in South China which latter would appear to be governed by section 180 (2) of the Army Act. These are, however, small matters and, strictly speaking, outside the scope of the present work.

Peninsular War. By G. P. A. Phillips.

The work is in two volumes. Part I deals with the years 1808—1810 and Part II with 1811—1813. The latter should be in great request for the 1907 Military History Examinations. From the size of the volumes one might imagine that they contained only a *précis*, but this is not so, for the author has compressed into them an astonishing amount of matter. There are numerous excellent maps and references to Napier abound.

Our advice to officers using these volumes is to compare the subject-matter with Wellington's despatches if possible. These will throw a brighter light on the subject in many instances than the author could do in the space available. For example, the reasons assigned for Wellington's choice of his line of advance into Spain in May 1812 are somewhat meagre—(Part II, page 98). It is very necessary to know why the other lines of advance, south against Soult or centre against Joseph were not adopted.

Wellington's original plan of a direct attack on Soult was given up for the reasons given in Napier IV, pages 158-9. The advance on Madrid had been tried in the Talavera Campaign and bitter experience (as given by the author in Part I, page 70), was against it.

The Campaign of Vittoria is well told. The author draws comparisons between it and Waterloo, Königsrätz, etc. We advise candidates for examinations to compare it with Liaoyang and Mukden.

The volumes are cheap at 3 shillings each.

TACTICAL SCHEME COMPETITION, JANUARY 1907.

References to a Map which will be supplied on demand.

GENERAL IDEA.

DOTOI and DATTA KHEL are posts on the Line of Communications of a force operating to the East. The Base is about 50 miles West of PIYADIN. The garrisons of the above posts are —

DOTOI	...	4 Companies of Infantry
DATTA KHEL	...	{ 1 Squadron Cavalry
		{ 1 Mountain Battery
		{ 2 Battalions Infantry.

The section of the Line of Communications from 5 miles West of PIYADIN to 10 miles East of DATTA KHEL is under the command of Colonel X, whose Headquarters are at DATTA KHEL. The inhabitants of the surrounding country are frontier tribesmen, fairly well armed with modern rifles.

SPECIAL IDEA

At 6 P.M. on the 1st December Colonel X receives information from native spies that hostile tribesmen are assembling near GURBAZ with a view to a raid on the Line of Communications. The numbers are vaguely given at about 5000.

REQUIRED.

1. Appreciation of the situation
2. An necessary orders

Intending competitors should forward their answers to the Secretary of the Institution, together with the sum of Rs. 1, when they will receive a copy of the map to which the scheme relates together with all instructions.

This competition will close on 1st July 1907. Solutions received after that date will be treated as "LATE" for adjudication

THE JOURNAL

OF THE

United Service Institution of India

Vol. XXXVI.

April 1907.

No. 167.

THE HISTORY OF THE MAMELUKES.

Part of a Lecture delivered at Bangalore on 6th April 1906.

BY MAJOR N. M. SMYTH, V.C., 6TH DRAGOON GUARDS.

Introductory.

Mahomed, the so-called founder of Islamism, or yielding to God, before his death, in A. D. 632, deputed Caliphs or successors who ruled till 661 at Medina, till 750 at Damascus and till 1258 at Bagdad; in 1261 they were re-established in Egypt and from 1517 the title was claimed by the Sultans of Turkey.

For several generations these Caliphs of Bagdad had fallen into the dangerous habit of attracting to their capital thousands of slaves from Mongol and Turkoman tribes, in preference to the negroes of Africa, who were given less honourable duties. They were used both as body-guards and as contingents to countervail the influence of the Arabs. The same system was adopted by the Fatimide Caliphs of Northern Africa and Syria, a sect of the Shia or Ali-ite faith which arose from the Berbers of North Africa adopting a Mahdi in the beginning of our 10th century, and the custom prevailed with the succeeding dynasty, to which belonged Saladin, the heroic figure in Sir Walter Scott's *Talisman*, the builder of the Citadel of Cairo. Owing perhaps to a want of principle in the natives, the employment of foreign myrmidons has generally been fraught with success in oriental countries, and we find this ancient custom maintained to-day in the Nizam's dominions.

Conquered and starving tribes on the barren steppes of Asia did not scruple to sell their children to the slave-dealer who plied them with romances of the wealth to be gained in Egypt.

The lads became the Mamelukes of Egypt, destined to strike blows whose echoes would ring throughout the length and breadth of the old world.

The name Mameluke, which conveys little more to many people than the telegraphic address of 127 Piccadilly, is pregnant with

maps. Such being the case, is it now necessary when an Officer has learnt sufficient Topography to enable him to read and grasp the details of any map, to compel him annually to make a route or position sketch for which he has no aptitude? Would it not be better to instruct him in some more useful form of Reconnaissance? This subject comprises considerably more than mere map making, but practical report writing is seldom practised in peace. Commanding Officers when satisfied that the juniors have thoroughly mastered the principles of Military Drawing should practise these Officers in such forms of Reconnaissance as they might be called on to perform on service. The results which they could then submit to Brigade or Divisional Headquarters would be of some practical utility and not consigned like the present annual sketches to the waste paper basket.

Take, for example, a Regimental Officer required on service to make a reconnaissance of a road, river, position or even a large tract of country. He would first of all obtain any available maps and from them mark on his paper (enlarging if necessary, to the required scale) the most prominent features and land marks, and having made notes of any existing information, would then start out to verify and amplify what was already known, but how often do we see this practised in peace time?

How many Officers have any idea of rapidly estimating the amount of available supplies in a district? If they arrived at a large village with a few native shops, they could not estimate whether there was sufficient food grains to feed a Regiment or a Division. Similarly, with standing crops, how many could give the probable acreage of a field by looking at it, or estimate the amount of corn in a ripening wheat field, or how many thousand pounds of kurbies could be procured from a crop of standing jowar, and yet on service this is the sort of information that a Reconnaissance patrol might well be expected to obtain. Intelligence reports collected on Manoeuvres and Staff Rides abound with the expressions "little" and "plenty" when referring to supplies. Vague terms such as these are almost useless, but what else can we expect if Officers are never taught how to make rough estimates of quantities.

Attention has been drawn to the lack of accurate military maps in the neighbourhood of stations. Ordnance maps certainly exist, but many of them are old and do not show the newer roads and canals, while a few of them contain only very meagre information. We have Route Books (many of the notes in which are hopelessly inaccurate) and out of order Military Reports on Railways, Civil Gazetteers, etc., etc., and a vast amount of information scattered throughout the papers and news. What is wanted is that the information should be collected and arranged in a form that enables the Officer on Service to refer to it and attach to it a complete and correct sketch. Engineering Officers instead of making numerous actual sketches might preferably be employed on this work.

As a concrete example of the necessity for some form of Military Gazetteer affecting a certain area, we will consider a tactical scheme issued to Field Officers of the Karachi Brigade.

The theatre of operations includes that part of Sind from the sea to the 26th degree of Latitude. In order to write an appreciation and draw up a plan of operations, the following information must first be collected :—

1. Particulars of the various routes.
2. Particulars about the Railway, including embankments, bridges, workshops, rolling stock, etc., etc.
3. Particulars about the River Indus and the probable number and size of boats that would be available.
4. Nature of country, nature of crops and dates when sown and reaped.
5. Climatic conditions and water-supply, particularly in those districts not traversed by main routes.
6. Particulars about canals, and for what period the non-perennial ones contain water.
7. Size and population of chief villages, amount of supplies, camels, carts or other transport available in each district.

To assist us in collaborating this information we have an old and out-of-date Route Book, the Sind Gazetteer, dated 1876, the Military Report on the Railway, and are dependent on Civil Officers to supply us with the greater part of the information which is most necessary for Military purposes.

In the event of war on a large scale on the Indian Frontier, we must be prepared for local risings and disturbances within our own territories, to act rapidly against rebels and to suppress a rising before it has assumed formidable proportions is of the utmost importance, and the work of a Flying Column detailed for such a purpose would be greatly simplified if they possessed a map with accurate and detailed information of the district in which they were called upon to act.

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The volumes are cheap at 3 shillings each.

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Reference to a Map which will be supplied on demand.

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BY MAJOR N. M. SMYTH, V.C., 6TH DRAGOON GUARDS.

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Mahomed, the so-called founder of Islamism, or yielding to God, before his death, in A. D. 632, deputed Caliphs or successors who ruled till 661 at Medina, till 750 at Damascus and till 1258 at Bagdad; in 1261 they were re-established in Egypt and from 1517 the title was claimed by the Sultans of Turkey.

For several generations these Caliphs of Bagdad had fallen into the dangerous habit of attracting to their capital thousands of slaves from Mongol and Turkoman tribes, in preference to the negroes of Africa, who were given less honourable duties. They were used both as body-guards and as contingents to countervail the influence of the Arabs. The same system was adopted by the Fatimide Caliphs of Northern Africa and Syria, a sect of the Shiea or Ali-ite faith which arose from the Berbers of North Africa adopting a Mahdi in the beginning of our 10th century, and the custom prevailed with the succeeding dynasty, to which belonged Saladin, the heroic figure in Sir Walter Scott's *Talisman*, the builder of the Citadel of Cairo. Owing perhaps to a want of principle in the natives, the employment of foreign myrmidons has generally been fraught with success in oriental countries, and we find this ancient custom maintained to-day in the Nizam's dominions.

Conquered and starving tribes on the barren steppes of Asia did not scruple to sell their children to the slave-dealer who plied them with romances of the wealth to be gained in Egypt.

The lads became the Mamelukes of Egypt, destined to strike blows whose echoes would ring throughout the length and breadth of the old world.

The name Mameluke, which conveys little more to many people than the telegraphic address of 127 Piccadilly, is pregnant with

A History of Tactics. By Major H. M. Johnstone, R.E. (retired).

In the preface the author claims to have done his best to present the stages of the development of tactics in both its branches—the one relating to the actual formations of troops when near the enemy and allied to questions of drill, discipline and training—the other being generally known as grand tactics. The author hopes that he has arranged the facts and opinions contained in the volume in such a manner as to render the subject readable to British Officers.

The book contains 23 chapters with 27 plates. The latter often contain more than one plan and these plans again often show more than one or two stages of a battle. The book has therefore had a great deal of work put into it and should be a valuable one to all officers studying tactics. In reading the table of contents one is struck by the fact that only six chapters (about one-fifth of the whole book) are devoted to the period up to and including the Peninsular War, while the remaining 17 chapters deal with the events of the last 50 years or so. Again, no less than eight of these 17 chapters (about one-third of the work) are devoted to the period 1866–71.

We have always understood that the era of Modern War began with Gustavus Adolphus and we think it is a pity therefore that the author did not begin his examples with a battle from that Monarch's reign. At Breitenfeld Tilly attempted on a smaller scale very much the same manoeuvre as Frederick carried out at Kottbus and was beaten just as Frederick was.

We commend the author's closing paragraph to those who are afraid to mortarize the nation. "And in Man there is the spirit that leads to victory or that leads to defeat. That spirit is the outcome of his environment and of his education from the very cradle."

Lessons of the Russo Japanese War. By General de Negrier

Translated by E. Louis Spiers, 8th Hussars

This book has been submitted to and approved by General de Negrier. The deductions from the war drawn by this distinguished officer must carry great weight and should be read by all. There are a few inaccuracies in the text, such as the statement that General Nogi won the battle of Kinsui (NANSUAI). It will be a matter of great satisfaction to the whole British Army to know that General de Negrier writes that the lessons of the South African War have been well as contributed by those of Manchuria. Our late opponents in South Africa will be interested to hear that the Russians have adopted the word "Commander" and use it in the same sense as the Boers did. The remarks on Cavalry and infantry indicate Lord Roberts' preference for Cavalry Training 1904. It is stated that in spite of its defects the Russian Cavalry is far in advance of that of the rest of the Continent and that no European Cavalry would have carried out Maschenko's raid any better than he did. Cavalry must have howitzers or light mortars in order to

reduce field works and must be armed with the bayonet. According to the author it was the action of the Japanese Cavalry which decided the battle of Mukden—not by shock tactics but by its mobility. In fact the author is undoubtedly against shock action to which he applies the word “obsolete,” and would turn all Cavalry into Mounted Infantry. He talks about “the old school’s abnormal infatuation for military tournaments, polo matches, races and the like with its ill-concealed contempt for shooting.” The latter remark no longer applies to British Cavalry as the latest musketry returns can show. We wonder what British Cavalrymen will say to the statement that they “already begin to realise that in battle Cavalry must now act as Infantry.”

As regards Artillery the old cry for weight of metal is again heard. Observation, indirect fire and cover are all touched upon.

The Infantry has only a small paragraph specially devoted to it. More night work—a lighter load—the latter to include a trenching tool and some sort of sleeping shelter or *tente d’abri* are advocated. A vivid account of one of the Japanese assaults at Liaoyang should be read by all officers.

The author would have armies supplied with refrigerating plant and portable railways. Verily an up-to-date modern army is a fearful and wonderful article.

The last paragraph of the book will appeal to all Frenchmen. It is well known how heavily the fact of Germany’s rapidly increasing population as compared with France’s decreasing birth rate weighs on the mind of every French patriot. So long as “numbers do not decide victory,” there is hope for everybody, even for the puny British Army.

The Military Law Examiner. By Lieut.-Col. Sisson C. Pratt.

6th Edition, revised and corrected up to July 1906.

(Aldershot—Gale and Polden.)

[REVIEWED BY D. J. A. GENERAL, WESTERN COMMAND, POONA.]

We welcome a new edition of this work which, in common with many others, we regard with gratitude, dating from the time when, as a condition of promotion, we wrestled with the most dismal but most necessary subject of Military Law.

Colonel Pratt has brought our old friend up to date by including the most recent papers set and by rewriting or correcting all old answers which are affected by the introduction of “detention” and the other changes contained in the Army Annual Act of 1906.

If we might suggest an improvement for a future edition, it is that references to the *official* manuals and regulations be inserted after the answers. Examination, being now conducted “with books,” facility in referring to the official volumes (which alone are permitted to be used) is of importance, and can only be acquired by practice.

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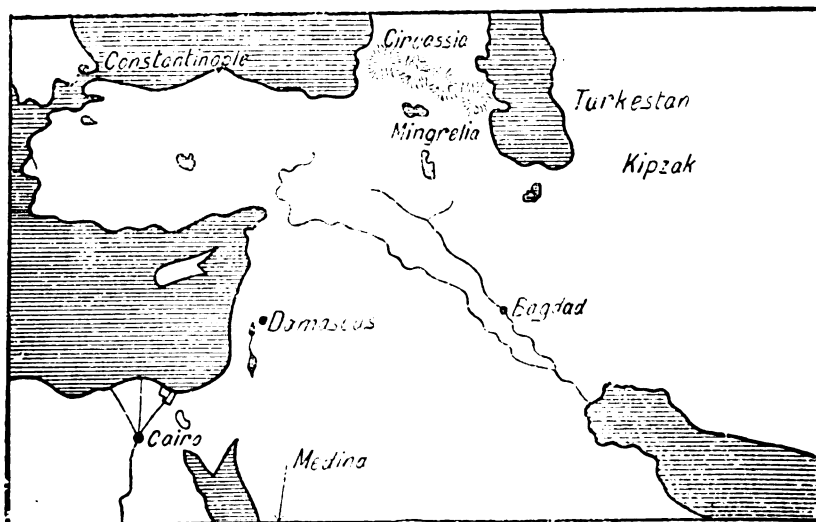
The name Mameluke, which conveys little more to many people than the telegraphic address of 127 Piccadilly, is pregnant with

meaning to the oriental. Derived from the Arabic *malak* to possess, we get *malik* an owner or king, and the past participle becomes *mamluk*, signifying that which is possessed, in a word a slave. But the term is less humiliating than the words *abd* and *khadam* applied to the household drudge or serf of the fields, and the Mamelukes' name eventually became so formidable that at its mention kings trembled on their thrones.

The origin of this slave army of Egypt as a concrete organisation is traced to the 13th century, when Ghengis Khan with his Mongolian hordes or tribes made himself master of most of Asia, including Pekin and the five northern provinces of China, the sultanate of Carizme extending from the Persian Gulf to the borders of India and Turkestan and parts of Asia Minor, reaching even into Europe to Lignitz in Silesia and Neustadt in Austria.

He enslaved vast numbers of the vanquished, for even then as in modern oriental warfare, those who preferred surrender to death became, *ipso facto*, the slaves, body and soul, of the victors; escape was seldom contemplated and no objections were raised to embracing the religion of their new masters or to waging war against their own kith and kin.

THE SUCCESSIVE CAPITALS OF THE CALIPHS AND THE CRADLE OF THE MAMELUKE CASTE.



Of Ghengis Khan's captives, who were almost a drug in the market, Saleh Najmeddin, Sultan of Egypt, bought 12,000, mostly natives of Mingrelia, Circassia, Kipzak and Turkestan and formed them into a body of regulars, but they soon became insubordinate and rebellious, though it was not till the next reign that they interfered in the government, assassinated the Sultan and appointed one of their own number in his place.

The Princes of Egypt settled their Turkish and Mongolian slaves on an Island in the Nile, so as to keep them out of the city, whence these were called Bahrites (Rivermen). The Circassian slaves, a later importation, were called Burjites (from Burj a Tower) from being quartered in the Citadel of Cairo.

These needy and degraded bondsmen, ennobled by martial discipline and religious enthusiasm, benefiting in fact as the benighted peasants of other European countries do to-day by conscription, were destined to develop into the factor which hurled the united forces of Europe out of the Holy Land and put back the regeneration of India for five centuries. They became the back-bone of the Saracens (a corruption of the Arabic *Shargūn* or Easterns), and were by origin and name the antithesis of the Franks (Freemen), as the Crusaders were called, a word which is used by the natives to denote any European, to this day, throughout the East, even to China.

THE CRUSADES.

The sixth and penultimate Crusade opened with the capture of Damietta in 1249 by Louis IX of France, who after a ruinous delay advanced towards Cairo, but the Nile flood combined with the Mamelukes to encompass his downfall, and Louis was made prisoner with the greater part of his nobles. All who could not redeem their lives by service or ransom were massacred in cold blood and the walls of Cairo, seven miles in perimeter, were decorated with their heads.

But Egypt now afforded a new example of the danger of prætorian bands; for the Mamelukes, their thirst for blood not having been satiated, murdered their Sultan Touran Shah, the last of the race of Saladin, and elevated the Mameluke Beibars to the throne. The assassins actually entered the chamber of the captive French king with drawn scimitars, but the calmness of Louis commanded their respect, their avarice prevailed over their cruelty and the relics of the French army were permitted to embark for Palestine, on payment of a million pieces of gold, and the restitution of Damietta.

Louis tarried four years within the walls of Acre unable to reach Jerusalem, and unwilling to return without honour to his native land, but eventually, having exchanged many shots for a little glory, he returned to France a sadder if a wiser man.

But a cloud was gathering in the East and countless predatory horsemen of kindred breed and mettle challenged the pre-eminence of the more highly disciplined Mamelukes, who now like all the conquering armies of the time consisted primarily of cavalry.

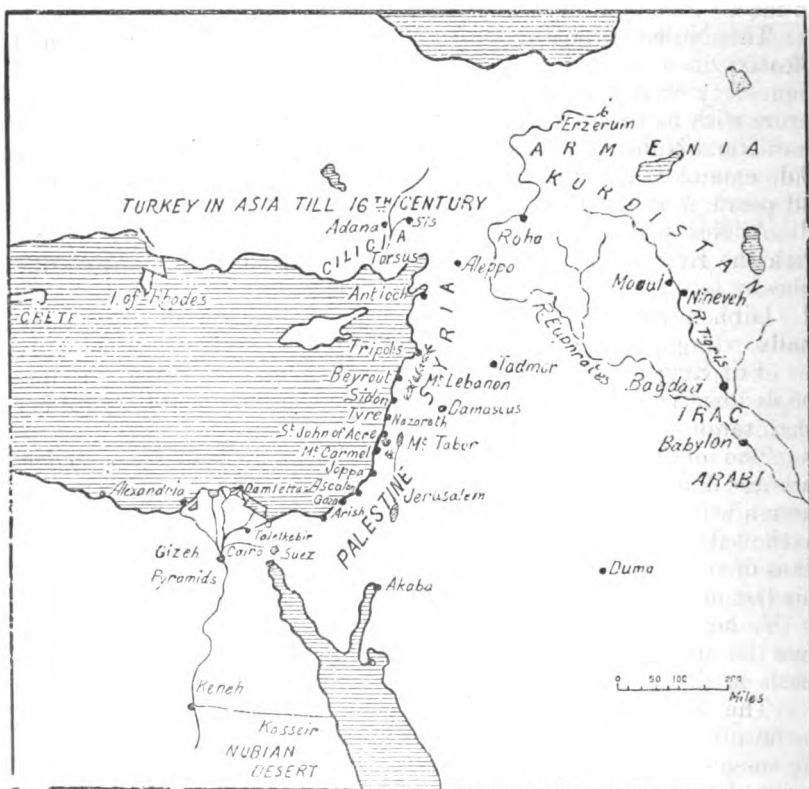
In 1258 the Mongols had stormed and sacked Bagdad, executed Mostasem, the last of the temporal successors of Mahomed whose noble kinsmen of the race of Abbas, the prophet's uncle, had reigned in Asia above 500 years. The Mongols spread west of the Tigris and Euphrates, pillaged Aleppo and Damascus and threatened to join the Franks in the deliverance of Jerusalem. Egypt was lost had she

been defended only by her feeble offspring, but the Mamelukes had breathed in their infancy the Scythian air; equal in valour, superior in discipline, they met the Mongols in many a well fought field and drove them to Persia.

The 7th Crusade A. D. 1269—1272 was embarked upon when all hope of a Mongol alliance with the Franks had vanished.

The memory of his defeat excited Louis, after 16 years of wisdom and repose, to undertake this last of the Crusades. The cross was also assumed by Prince Edward of the Longlegs, son of Henry III of England, and by a great number of English knights.

**THEATRE OF MAMELUKE WARS WITH CRUSADERS, MONGOLS,
AFRICANS, ARMENIANS, TURKS, FRENCH AND BRITISH.**



The loss of Antioch in 1268 known as the Queen of the East, the Capital of Syria, had provoked the enterprise, but Louis first steered for Africa in the wild hope of baptising the Sultan of Tunis.

Instead of a proselyte he found a siege; the French panted and died on the burning sands; St. Louis expired in his tent, and no sooner had he closed his eyes than his son and successor gave the signal of retreat (A.D. 1270). But the English Prince would not

abandon the enterprise : at the head of 1,000 of his countrymen the future conqueror of Wales and Scotland delivered Acre from a siege, marched to Nazareth with an army of 9,000 men, emulated the fame of his uncle Richard of the Lion's Heart, extorted by his valour a ten years' truce and returned to his native Isles suffering from a dangerous wound from the poisoned dagger, of a fanatic assassin, his life having been saved by his wife Eleanor of Castille who sucked the poison from the wound.

Beibars Bandukdary (the gun-bearer), first of the Bahrite Dynasty of Mameluke Sultans, spent the years 1274 and 1275 in various successful raids on the borders of Asia Minor and upon the Armenians for alleged breach of treaty. Cilicia was given over to rapine and flames and the booty covered all the open ground in Antioch.

The Nubians having raided Upper Egypt were attacked and defeated in a pitched battle south of Dongola. As they refused Islam they were forced to submit to the poll tax payable by unbelievers with half the produce of the soil, and to a tribute of elephants, giraffes and Nubian rarities, which probably included ostrich feathers, gold, emeralds and onyx from the east of the Nile and chrysolite and pearls from the Red Sea islands.

At that period there were Christian churches in Nubia, for St. Mark the Evangelist had converted both the Copts and the Riverine tribes.

Gibbon relates that the conquest of the Crusaders was now finally extinguished by the Mameluke Sultan. The Latin principality was extirpated ; and the first seat of the Christian name was dispeopled by the slaughter of 17,000 and the captivity of 100,000 of her inhabitants.

The maritime towns of Laodicea, Gabala, Tripoli, Berytus, Sidon, Tyre and Jaffa and the stronger castles of the Hospitalers and Templars successively fell, and the whole existence of the Franks was confined to the city and colony of St. John of Acre, which after the loss of Jerusalem became the metropolis of the Latin Christians. Against this last foothold of the Crusaders the Sultan Khalil marched in 1291 at the head of 60,000 horse and 140,000 foot. After a siege of 43 days the Mameluke made a general assault ; the city was stormed and death or slavery was the lot of 60,000 Christians.

The King of Jerusalem, the patriarch and the grand master of the hospital effected their retreat to the shore ; but the sea was rough, the vessels were insufficient and great numbers of the fugitives were drowned before they could reach the isle of Cyprus.

The Mamelukes demolished the churches and fortifications of the Latin cities, but a motive of avarice or fear caused them to leave the Holy Sepulchre untouched and accessible to some devout and defenceless pilgrims.

In 1303 the Mongol army, 100,000 strong with its Armenian and Georgian contingents, was defeated by the Mamelukes near Damascus, and on the Sultan Nasir's triumphant return to Cairo the

road was so laid with carpets that the hoofs of his charger did not touch the ground during the march of over 700 miles. The rejoicings in Cairo were so extravagant and undevout that men were thankful when an earthquake followed and put an end to the revels and to some of the revellers.

In 1304-05 the Armenians were again attacked for having joined the Mongols and a campaign was led against the Druses in their mountains between Tripoli and Damascus. All Christians under Mameluke domination were treated with the utmost intolerance and all churches or synagogues built since the rise of Islam were demolished. Christians were ordered to wear black turbans and Jews yellow; they were alike forbidden to mount a horse or to carry arms; they might ride on mules but only sideways and with no decoration on the saddle; they had to give way to Moslems and leave them the middle of the road; in assemblies they had to rise up before believers and subordinate the voice to theirs; Christians were prohibited the use of bells for worship; they were forbidden to possess Moslem slaves or captives; should they resort to a public bath they were to have a bell tied round the neck, and any familiarity with a Moslem female was met by death.

To this day the Copts of Egypt are distinguished by the black turbans and robes which recall the persecution they suffered until comparatively recent years. Their name is considered to be derived from the Greek *Aeguptos*, but their line is traced back, untainted by the blood of Arab invaders, to the ancient Egyptians, to whose written language theirs is closely allied, although it is now only used in the translation of the Scriptures with parallel columns in Arabic. Their physiognomy closely resembles that of the sculptured figures of ancient Egypt and of the mummies.

In the war against the Mahdists they were brought into the Egyptian army for the first time and with excellent results.

But the tyranny of the Slave Sultans extended also to their own comrades and co-religionists. The Sultan Nasir in 1310 on ascending the throne for the third time, from which he had been twice banished, began "to regret the clemency he had promised to Beibars II, his former minister, and had him brought up in fetters. He then reproached him for the niggardly treatment of past years. Though Beibars confessing it all yet pleaded for mercy, he was flogged and carried off to the chamber of death."

When half suffocated, the bow-string was loosened and the Sultan having again upbraided him had him strangled before his eyes and the body cast into a sty to be devoured by swine. Another minister, Salar, notwithstanding his support and friendship, fared no better, he was cast into prison and deprived of food. The Sultan sent him a tray which the famished chief eagerly opened, but found the covers concealed dishes filled one with gold, another with silver, a third with pearls and jewels. He had gnawed his palms away and his fingers half eaten remained in his mouth when he expired after a fortnight's starvation.

The summer-time was spent by Nasir in ridding himself of all whom he feared.

The usual preliminary of execution was the parading on a camel—a ghastly spectacle. The victim was first stretched upon a board on which he was fixed by iron nails, through the arms and feet, the whole was then fastened on a camel's back and the victim paraded through the city.

Thus the Mameluke empire was developed.

In 1308 to 1320 Nasir extended his rule westwards; the Governor of Tripoli being his nominee, and Tunis even being held in possession for a time.

In 1366 the Sultan Shaban, by means of a boat expedition up the Nile, established Mameluke supremacy in the Soudan and at Suakin.

Organisation.—In 1420 the Mameluke army, it is recorded, consisted of three parts—the regular troops in the pay of the State, the Mamelukes of the various Emirs who supported them from their fiefs and Mamelukes of the Sultan paid from the royal domains.

In 1516 the strength of the army moving against the Turks in Syria was as follows:—15 commanders of 1,000 each besides many Emirs of less degree, 5,000 of the Sultan's Mamelukes with the militia, the whole being supplemented by Syrian and Bedouin contingents and the majority of the force being mounted.

As to oversea expeditions the Sultan Jacmac who over-ran Cyprus in 1440 had disposed of a powerful fleet, transporting 18,000 Mamelukes for the unsuccessful siege of Rhodes, four years later.

To quote Sir James Muir:—

“Mameluke garrisons held the citadels and Mameluke governors ruled the land while native rule was never thought of. They were (internecine carnage and party-hatred notwithstanding) as regards the outer world an integral and united oligarchy. Rich, powerful and unscrupulous they were enabled to hold the people of the soil in abject and unquestioned thralldom. The number of fighting Mamelukes, irrespective of what we should term employed men, varied from 30,000 to 60,000.”

According to Yakub Artin Pasha the Mamelukes never pretended to create a race by intermarriage with the inhabitants of the countries in which they held sway. Even with the female consorts of their own race they never established dominant families or an aristocracy. A child never succeeded his father. The slave succeeded his slave master. The more we approach our own period in history the more this idea of a democratic slave-soldiery predominates among them. Fighting was their principal interest in life. Leading such an existence, family life was rendered well nigh impossible. Nearly 90 per cent or perhaps more died a violent death. At death, all their property and slaves went to their master, to their murderer or to the State whichever was the strongest. In the case of the State

succeeding, everything including the dead man's children were sold for the benefit of the Beit-el-Mal (Treasury). Those Mamelukes who married and led a retired civilian life were in the 1st or 2nd generation merged in the Egyptian people. Their children were called Mowallids and as half-breeds regarded as degenerate and useless as soldiers or administrators.

A remarkable feature of the Mamelukes was their pride in their slave origins. Their Sultan Kilawun esteemed it an honour to bear the title El Alfi, the thousand pounder, from the tall price at which he changed hands on two occasions.

Malthus in his work on Population wrote regarding the Mamelukes in Egypt:—"The present depressed state is not caused by weakening of the principle of increase, but by the weakening of the principles of industry and foresight, from the insecurity of property consequent on a tyrannical government."

The population being stationary, the necessity of replenishing the supply of men by the importation of slaves existed concurrently with misrule.

The Dynasty Falls.—In 1516 the Sultan Kansowa with a numerous following moved against the Turkish Army in Asia Minor, but the forces of avarice, unchastity and red tape had sapped the strength of the Mameluke leaders and Kansowa was defeated by Selim near Aleppo, partly from his inferiority in artillery and practical leaders, partly through the treachery of Kheirbeg, governor of Aleppo, who gave the signal of retreat to the Mamelukes.

Kansowa fell and to prevent his identification one of his own men cut off and buried his head.

Selim proceeded to the Citadel of Aleppo and to show his contempt of the garrison sent before him a lame soldier with a wooden club to whom the gates at once were opened.

One hundred million gold pieces, placed there for safety by the Mamelukes before the battle, fell into the Turk's hands. They continued their victorious campaign to Egypt, where they were opposed by Tumanbeg, who had been promoted Sultan, at Ridanieh near Cairo on 22nd January 1517. While the main body of Turks confronted the Egyptian trenches, a party crossing the Mokattem hill took the works in flank. Cairo was stormed but only to be recaptured and change hands repeatedly.

Fighting continued for three months till at length after two days' battle under the Pyramids, Tumanbeg was defeated and ungratefully betrayed by a Bedouin chief whose life he once had saved. Tumanbeg was by Selim's orders hung at the City Gate as a malefactor and his widow tortured for her treasure.

But the renegade Bedouin did not escape, for he was afterwards butchered by Mamelukes who drank up his blood from a loving cup, and then exposed his head amid rejoicings in the streets.

Ottoman Rule.—Thus Selim put an end to the Mameluke kingdom. No quarter was given to the vanquished and the battlefield was hung with thousands of Circassian heads.

He placed a Turkish Pasha Governor over Egypt, who was changed year by year, but he was compelled by circumstances to leave the 24 Mameluke Beys as Mudirs or provincial governors.

For 200 years this government lasted. Turkish authority was maintained by the renowned Janissaries, and we may make a brief diversion to trace their origin and subsequent dissolution.

Janissaries.—About the middle of the 14th century the Ottomans were invited by a Byzantine faction into Europe, they fixed themselves near Constantinople, and Amurath I during his 30 years' reign subdued Roumania and the Christian States on the Lower Danube. The prisoners of war were formed into Infantry Corps, and as in the case of the Mamelukes, became perverts to Islam. A celebrated Dervish in giving them his blessing on parade said ; " Let them be called Janissaries" (from Yengi cheri or new soldiers):—a name by which they were ever after known. In 1329 they were organised as the nucleus of the Turkish Infantry with the promise that they might earn personal freedom by fresh conquests. The ranks were recruited by a tax, of every fifth male child, which was levied upon the Christian population. In the 19th century they finally became uncontrollable and were disbanded and many massacred in 1826.

Revival of Mameluke Power.—In 1750 Turkish authority in Egypt began to wane. The number and wealth of the Mamelukes gave them such a superiority that the Viceroy appointed by the Porte had to conform to their wishes. None but Mamelukes could become Beys and they still continued to multiply their numbers by the flow of slaves purchased by them from Siberia, Circassia and adjoining lands.

The head of the Mamelukes came to be called Sheikh-el-Baland, or Chief of the land, and when supported by the Emirs he was all powerful and the Porte had to abide by his demands.

In the latter half of the 18th century Ali Bey was the Sheikh and he gradually reduced the Janissaries, the Osmanli prop, while he increased the court Mamelukes till they reached 6,000. Then, assuming independent power, he deposed the Ottoman Governor. Victorious also over Syria and the Bedouins he was recognised as Lord of the Holy Places by the Sherif of Mecca, yet after a brilliant reign he was eventually betrayed and slain in Syria.

The Era of Napoleon.—In 1798 Napoleon invaded Egypt with the ostensible object of assisting the Sultan by overthrowing the power of the Mamelukes who had now reduced Turkish authority to a mere shadow. Napoleon in his memoirs gives an interesting account of these Eastern horsemen. He says—

"Two Mamelukes would hold their own against 3 French, because they were better armed, better mounted, better drilled. They had 2 pair of pistols, a blunderbuss, a carbine, a helmet with vizor, a coat of mail and many horses and servants on foot to aid them. But 100 French Cavalry would not fear 100 Mamelukes, 300 would conquer a like number and 1,000 would beat 1,500, so great is the influence of tactics, order and manœuvres."

In fact nothing but the highest state of efficiency will enable our own civilised forces to cope with an enemy of this character in the future who may be, man for man, keener and calmer in action and infinitely superior physically.

At this period the Mamelukes comprised 12,000 horsemen commanded by 24 Beys who each maintained and equipped about 500 or 600 men. Each soldier was followed by attendants with a second horse.

Their horses comprised both barbs and high-caste desert Arabians, obtained from the Druses of Howran and from the Bedouins on the east of Syria and Palestine.

On July 4th, 1798, the first division of the French army which was fated to destroy the prestige of the Mameluke arms set forth by night into the desert south of Alexandria. Moving on Cairo it was threatened by Mameluke horsemen continually: at Chebreiss a charge of 800 of them was turned aside, but skirmishing continued until the decisive battle of the Pyramids on July 21st near Cairo, where Murad Bey with 10,000 Mameluke horsemen and a host of ill-trained infantry occupied an entrenched position, the right resting on the Nile bank at Embabeh, the left stretching towards the Pyramids.

Napoleon seeing that the 40 Egyptian guns were immobile, moved west to outflank the position from the desert. A confused swarm of 7,000 Mamelukes charged the French squares as they made their flank movement. They were met by French Artillery fire and volleys from the squares which were formed 6 deep. Those Mamelukes who were not mowed down by the pitiless fire attempted to break the squares by reining their horses back upon the bayonets, using their firearms, and furious at their ill-success, hurling the empty weapons at the heads of their foes.

A score of their choicest cavaliers perished in the midst of the squares. Those who were dismounted crept up to the phalanx of infantry cutting with their cimeters at the legs of the front ranks but at length the Mameluke army, in Alison's words, "thoroughly beaten fled in confusion leaving a rampart of dead men and horses around the squares—terrible proofs of the pertinacity and bravery with which they had fought. The losses of the Mamelukes were very heavy, while the French loss was only counted in hundreds."

Victorious in the combat of Sediman, Desaix's Division reached Assouan and the inscription recording the occupation of Upper Egypt remains to this day cut on the face of the cliffs at the First Cataract of the Nile.

After further fighting the French assumed the reins of government and even began raising an Egyptian army under French leadership.

Meanwhile Turkey declared war on France.

From March 18th to May 20th, 1799, Acre was the scene of one of the fiercest and most dramatic sieges in military history. Fitchett States: Napoleon had captured Caza and Jaffa and was about to attack Acre which lay between him and his ultimate goal, Constantinople.

But Sidney Smith who commanded the British Squadron at Alexandria sailed in his flagship the *Tiger*, with the *Theseus*, under Captain Miller, and two gunboats to assist the Turks in their defence of this seaport, which resembles a blunted arrow-head jutting out from a point on the Syrian coast, the neck of the arrow was protected by a ditch and wall, but the British having command of the sea could sweep the four faces of the town with ships' guns. The defenders guessed, from the delay of the French in opening fire, that they were waiting for their siege train to arrive by sea.

Sir Sidney Smith kept vigilant watch; attacked the French flotilla as it rounded the promontory of Mount Carmel; captured 9 of the vessels; carried them with their guns and warlike material to Acre and mounted his 34 captured pieces on the defences of the town.

It is needless to say that a siege directed by Napoleon in person was urged with amazing fire and vehemence. The bombardment continued for 60 days and nights; a breach 50 feet wide was made and so sustained was the fighting that on one occasion the combat raged in the breach for 25 hours and neither side would yield.

The two lines of fighting men on repeated occasions clashed bayonets together and wrestled and stabbed and died, till the survivors were parted by the barrier of the dead which grew beneath their feet.

French accounts allow that the fallen remained unburied and finally the French soldiers refused to cross the ground heaped with the corpses of their comrades till Napoleon by threats and flattery suppressed imminent mutiny.

The French engineers betook themselves to mining. The besieged made a sortie and Lieutenant Wright in spite of two shots in his sword arm led his sailors to the mouth of the mine, down which they leaped, slew the miners, destroyed their work and regained the town. At evening on May 7th the sails of a fleet hove in sight and all firing ceased as besiegers and besieged watched the approaching ships. It was at length seen that they flew the crescent and were the Turkish fleet from Rhodes bringing reinforcements. Napoleon calculated that there remained six hours before they could cast anchor. Eleven assaults had been already made in which 8 French Generals and the best officers in every branch of the army had perished. There remained time for a twelfth assault. He might yet pluck victory from the verge of defeat.

At 10 o'clock that night the French Artillery was brought up close to the counterscarp, a new breach was made in the curtain.

Lannes led his division against the shot-wrecked tower and General Rimbaud took his grenadiers with a resistless rush through the new breach. "The muzzles of the muskets touched each other." After severe losses the last assault failed!

The French buried their heavy guns in the sand; burnt their camps; according to some accounts their doctors killed the badly-wounded and the plague-stricken and with no impedimenta beyond the supplies necessary for the march they returned to Egypt.

During the investment a large Turkish force advanced to raise the siege. It consisted of the remains of the Mamelukes, the Janissaries of Damascus and Aleppo and an innumerable horde of irregular Cavalry. Napoleon was alarmed. Kleber was sent from Acre to join Junot at an advanced position at Nazareth. On his march he defeated 4,000 horsemen.

On the 16th April he moved to attack the Turkish camp at Mount Tabor and was met by 15,000 Cavalry and as many Infantry, whose impetuous charges were stubbornly repelled for over six hours till the arrival of Napoleon in person who, overlooking the field from a height, launched his Cavalry and Horse Artillery against those Mamelukes who were in reserve and with Bon's division in two squares attacked the remaining Turkish forces in flank and rear and drove them from the field.

On July 25th, 1799, a large force of Turks which had landed in Aboukir Bay was driven into the sea by Napoleon who shortly afterwards left for France.

At Heliopolis on the 20th March 1800 was fought the last great battle in Egypt between the Mamelukes and the French. Kleber led 12,000 veterans of France concentrated from all parts of Egypt. He formed them into four squares, with Artillery at the angles and the Cavalry in the intervals. Companies of grenadiers doubled the corners.

Denison writes: "An attack was made on the camp of the Janissaries in the village of Matarich which was advanced far in front of the Turkish army and it was soon captured and large numbers of its defenders killed.

"The Turkish main army then advanced to attack the French who formed a line of squares with the Artillery in the intervals and the Cavalry in rear of the centre ready to charge through at the critical moment.

"The battle commenced with the fire of the Artillery which was much more effective on the part of the French than on that of their opponents. The cannonading so galled the Turks that they prepared for a general charge. The concentration of their masses warned the French of the coming onslaught; 20,000 horsemen at full speed, shaking the ground with their thundering tramp was enough to try the stoutest heart. The French stood firm however while the Artillery poured volley after volley of grapeshot with hurried vigour into the advancing masses. The front rank were nearly all swept away by the storm of missiles which filled the air and the rear ranks dismayed at the carnage wheeled about and fled before a single musket-shot had been fired.

"The Grand Vizier rallied his troops and attacked again, but in a short time the whole Ottoman host fled in utter rout, leaving Kleber complete master of the field and of their camp."

He only survived to fall a victim to an assassin in Cairo.

On 21st March 1801, the British, with the loss of General Abercromby, defeated the French army of Egypt at Alexandria and on 28th August 1801 the French yielded to the British under General Hutchinson.

A force sent from India landed at Kosseir too late to take part in the fighting.

But the fanaticism of the Mamelukes still smouldered and a British force on its way to Cairo was surprised and heavily defeated by overwhelming numbers.

England, her object accomplished, evacuated Egypt in 1803.

The Massacre of the Mamelukes.—At length in 1805 Mahomed Ali Pasha of Egypt gained the supreme authority, and fearing the Mamelukes who now numbered 20,000 good fighting men, he took measures to get rid of them, but it was not till six years later that he put an end to the leaders of the race by a perfidious stratagem. The Beys and Emirs were invited to an entertainment in the citadel. On their taking leave, for the last time, as it too soon transpired, the outer gates closed with an ominous clang and every way of egress barred, the whole body, said to have been 470 in number, were shot down, by troops concealed upon the roofs and battlements and outside the windows. By further orders the multitude of Mamelukes in Cairo and throughout the land were pursued, slain or chased abroad. A spot on the citadel walls where one of the fugitives escaped by spurring his arab over the ramparts is still known as the Mameluke's Leap.

Some who were supporters of Mahomed Ali were spared and 2,000 under 18 years of age were incorporated in his body-guard.

Of the survivors of the general massacre some escaped to Syria, others to Dongola.

Some hundreds built a town in Lower Nubia and endeavoured to strengthen their force by disciplining negro slaves, but these were finally dispersed. Their last fastness was Shendy between Berber and Khartoum, now the headquarters of the Egyptian Cavalry: some died there; many were absorbed in the Jaali tribe of riverine Arabs, whilst others took service in the forces of Mahomed Ali that were going to the Soudan in 1824.

But the customs of the East are not to be abrogated by the mandate of an individual, and newly acquired or returned Mamelukes were in a few years again to be seen in Cairo till, in Arabi Pasha's rebellion in 1881, more than half of the officers of the Egyptian army are stated by Yakub Artin Pasha to have been Circassian Mamelukes belonging to the viceregal family. Some traces yet exist of this caste which was successively brave, cruel, artistic and depraved whose life-blood poured out in rivers has filtered deep into the desert sands leaving only a lurid stain to mark its course.

Many educated men of Mameluke stock are now in the Egyptian Government service, well satisfied to be employed under the ægis of the Pax Britannica and an infusion of Mameluke blood may be traced in certain families of the Abbaside and Berberi tribes of the Nile Valley. There are still relics of the vast armaments, the material of war, which was wielded to such purpose for centuries. Many antique weapons still encumber the arsenal at Cairo and may be purchased by the itinerant collector and in the Dervish Armoury,

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if any, references to books but simply practical facts brought to light during training in the hills. Except where most entirely on personal knowledge where scraps of enlightenment gained from the timely advice and suggestions it will be admitted that mountain warfare is the most effective of all training as it is undoubtedly the most troops that excel at it will have little trouble in proving themselves capable under any other conditions.

I will commence with some remarks on the physical training required to make one fit for hard work in the hills. It goes without saying that one must be sound in heart, wind, and limb; and the great secret is not to over do it at the start. Boys—like cats—are very hard to kill, and this may account for the rapid recovery, after a short rest, of the impetuous newly joined subaltern who rushes at severe climbs day after day to the immense amusement of the mountaineer and to the detriment of his own health. But with older men such folly is distinctly dangerous, and the result much the same as happens to the school master, barrister, and clergyman at home, who insists on negotiating a lofty peak the day after he arrives in Switzerland. The hill soldier comes down-hill very quickly—much quicker than we can manage—but always goes up hill slowly. [The immortal Shakespear realised this when he wrote:—"To climb steep hills requires slow pace at first".] Even in a race it is difficult to persuade him to run during an ascent for it is against his nature. And he always goes up on his flat foot. The uninitiated indulge in toe-climbing with a greatly increased weariness of the legs. After an altitude of 12,000 feet is reached, the rarified air will prevent any one going fast, and in many cases will necessitate a short halt at every hundred yards, even when moving at the slowest pace.

As a perfect training for mind and body, there can be nothing better than "Ju-jitsu." Captain Dopping-Hepenstal of my battalion went through a course in the London School and being an enthusiast has taught some of our men very successfully with a view to using them as instructors. The adoption of this art in place of our present physical drill, and perhaps gymnastics appearing very desirable, I will give you a few arguments in its favour for which I am much indebted to him. To begin with let me quote some recent remarks by Admiral Kamimura:—

"However expert a man may be in the technical points of a "Naval education, his service counts very little in time of war if he lacks presence of mind. The training in Ju-jitsu not only develops

after the battle of Omdurman were found Damascus blades, coats of mail armour, helmets and fire-arms just as they were described a century earlier by Napoleon.

Several sets of these arms and armour, with some Dervish imitations, were sent to Queen Victoria and the Kaiser William respectively.

Perhaps after the lapse of another century no vestige will remain but the strongholds and sepulchres of these slave soldiers and future generations will admit with scepticism the records of their existence.

In the words of Sir James Muir: "we search in vain for a parallel in the history of the world. Slaves have risen on their masters and become for the moment dominant. But for a community of purchased bondsmen, maintained and multiplied by a continuous stream of slaves bought, like themselves and by themselves * * * * * the entire governing body of the same slavish race; that such a state of things should hold good for two centuries and a half might at first sight seem incredible."

But this despotism of the gutter prevailed with little intermission for twice that period and its most mischievous issue was the abasement of Christians in the near east. In dealing with peoples to whom the name Ferengi is odious and who regard all who are not professed Musalmans as their hereditary enemies, let us remember that navies and armies are indispensable to inspire in them a desirable reticence. Napoleon's Adjutant referring to war said "Peace is the dream of the wise." We might say, that with nations whose religion is war, Peace is the dream of the fool.

NOTES ON HILL TRAINING.

BY MAJOR NIGEL WOODYATT, 3RD GURKHAS.

These notes make few, if any, references to books but simply record practical facts brought to light during *peace training* in the hills. Except where otherwise stated, they are based almost entirely on personal knowledge and experience, with here and there scraps of enlightenment gained by a little study or culled from the timely advice and suggestions of other officers. I hope it will be admitted that mountain warfare is the most instructive of all training as it is undoubtedly the most difficult. Troops that excel at it will have little trouble in proving themselves capable under any other conditions.

Preface.

I will commence with some remarks on the physical training required to make one fit for hard work in the hills. It goes without saying that one must be sound in heart, wind, and limb; and the great secret is not to overdo it at the start. Boys—like cats—are very hard to kill, and this may account for the rapid recovery, after a short rest, of the impetuous newly joined subaltern who rushes at severe climbs day after day to the immense amusement of the mountaineer and to the detriment of his own health. But with older men such folly is distinctly dangerous, and the result much the same as happens to the school master, barrister, and clergyman at home, who insists on negotiating a lofty peak the day after he arrives in Switzerland. The hill soldier comes down-hill very quickly—much quicker than we can manage—but always goes up hill slowly. [The immortal Shakespear realised this when he wrote:—"To climb steep hills requires slow pace at first".] Even in a race it is difficult to persuade him to run during an ascent for it is against his nature. And he always goes up on his flat foot. The uninitiated indulge in toe-climbing with a greatly increased weariness of the legs. After an altitude of 12,000 feet is reached, the rarified air will prevent any one going fast, and in many cases will necessitate a short halt at every hundred yards, even when moving at the slowest pace.

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"However expert a man may be in the technical points of a Naval education, his service counts very little in time of war if he lacks presence of mind. The training in Ju-jitsu not only developes

"a man's physical power and agility, but it also tends to make him resourceful in meeting all kinds of emergencies and surprises. When I took the cadets abroad on a navigation cruise I found those who were experts at Ju-jitsu were the most efficient and capable. Their physical development and their mental activity make them able to stand hardships much better than ordinary men. My impression has been further strengthened by the present war. I would recommend not only Naval men but all young men to devote some hours of their time to learning the art. The indirect benefit will be great in all ranks of life."

One cannot say at present whether it is desirable to teach Ju-jitsu to all classes of, say, the Indian Army. The Japanese evolved the system in order to give the little man the advantage over the taller and heavier one. Consequently agility of body and mind are the chief requisites. The big heavy man or the tall lanky one is at a disadvantage and therefore the system would probably require modifications to make it suitable for the taller races of India such as Sikhs, Pathans, Jats, etc. A tall man would possibly never become as *quick* as a smaller one, but his body would be naturally developed equally well and his mind trained to seize opportunities and to acquire that extraordinary alertness which is the chief feature of Ju-jitsu. But when we come to the Dogra, Gurkha and similar smaller men, we have *ideal* material to work on and such men should become every bit as good as the Japanese at their own game. Some of the advantages of the art are as follows:—

- (a) First and foremost is the mental development. Our system of physical training aim only at developing the body and not the mind, and generally the upper part of the body more than the legs. During a Ju-jitsu bout the brain is always working, meeting attack with counter attack and at the same time trying by a skilful ruse to lure the opponent to his downfall. An imagined opening is given in order that in attempting to benefit by it the adversary will lay himself open to one of the sudden unanswerable "locks" which make Ju-jitsu so formidable.
- (b) Judging by the results, pupils—out of sheer love of the game—continue practising after their tour of instruction is over. This can hardly be said of physical training and seldom of gymnastics.
- (c) The body is developed in a perfectly natural way all over, including heart, lungs and the muscles of the neck, ribs, etc. The exercise too is done in the open air, and the muscle made is good and natural.
- (d) Gymnastics with apparatus requires an expensive plant, whereas with Ju-jitsu a few cheap coats at Re. 1-8-0 each with a dhurri or grass mat or two are all that is wanted.
- (e) From a study of the art a good knowledge of anatomy is derived and instruction can be given as regards reducing ordinary dislocations.

- (f) Ju-jitsu is the science of rough and tumble and helps you to defend yourself in a tight place. Moreover the muscles developed and the alertness gained do not deteriorate when practice is left off. With gymnastics the opposite is the case, and after years of it you are practically little better able to defend yourself in the thick of a fight. The Japanese attribute their wonderful marching powers to Ju-jitsu and say it can be made a delightful exercise or the most strenuous in the world. The one apparent disadvantage is that instruction can only be imparted to one man at a time, though the others may learn much by looking on or practising together. As one instructor could not teach more than 4 to 6 men a day, the staff has to be large to commence with or the instruction proportionately slow, and unfortunately it is impossible to learn the art from a book, for these in most cases simply attempt to teach one a few tricks.

As regards dress there is no leg wear like a pair of "shorts" for hill climbing. Combined with "half-hose" (a

II.—Dress.

kind of footless stocking which can be pulled right up the thigh when cold) and canvas gaiters your legs are warm, comfortable, speargrass-proof, and free. Putties are excellent for those who can wear them and are much preferred by our men to gaiters, as supporting the muscles. The important point, still unsettled, is how to carry some kind of "overwear," which in the hills, is absolutely necessary, both on account of the frequent storms, and the danger of chills from a cold wind on the higher spurs after a hot climb. For officers one of Burbury's capes, weighing under 3 lb. and rolled up on the shoulders with cross straps over the chest is easy enough to procure and carry, but with the men it is a question of weight and expense, for the best waterproof material costs money and the common kind is very heavy. I find that on service scale our men carry about 55 lbs. on their person including the rifle, but excluding any outer garment. Now a hill coolie load in some districts—Kumaon for instance—is 50 lbs., along good roads, halting when he likes and for as long as he pleases and going his own pace. We ask the soldier to carry rather more at a uniform rate, across valleys, up mountain sides and possibly after some hours of this, to be ready to fight at the end of it. In these circumstances it is obviously inadvisable to adopt any heavy garment for over-wear or of a non-waterproof material which will increase in weight *when wet* such as the British Warm Coat. Taking it for granted that it is necessary to make the soldier partially independent of transport on emergency and provide him at the same time with some protection for wind and weather, the best solution I can think of is a light waterproof cape to be fastened on to the back with a warm jersey rolled inside. I can think of nothing lighter and its further advantages over other coats are, that in hot or wet weather it is preferable, and on emergency can be used as one side of a *tente-d'abri*. But to make him really

succeeding, everything including the dead man's children were sold for the benefit of the Beit-el-Mal (Treasury). Those Mamelukes who married and led a retired civilian life were in the 1st or 2nd generation merged in the Egyptian people. Their children were called Mowallids and as half-breeds regarded as degenerate and useless as soldiers or administrators.

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For 200 years this government lasted. Turkish authority was maintained by the renowned Janissaries, and we may make a brief diversion to trace their origin and subsequent dissolution.

Janissaries.—About the middle of the 14th century the Ottomans were invited by a Byzantine faction into Europe, they fixed themselves near Constantinople, and Amurath I during his 30 years' reign subdued Roumania and the Christian States on the Lower Danube. The prisoners of war were formed into Infantry Corps, and as in the case of the Mamelukes, became perverts to Islam. A celebrated Dervish in giving them his blessing on parade said ; " Let them be called Janissaries" (from Yengi cheri or new soldiers):—a name by which they were ever after known. In 1329 they were organised as the nucleus of the Turkish Infantry with the promise that they might earn personal freedom by fresh conquests. The ranks were recruited by a tax, of every fifth male child, which was levied upon the Christian population. In the 19th century they finally became uncontrollable and were disbanded and many massacred in 1826.

Revival of Mameluke Power.—In 1750 Turkish authority in Egypt began to wane. The number and wealth of the Mamelukes gave them such a superiority that the Viceroy appointed by the Porte had to conform to their wishes. None but Mamelukes could become Beys and they still continued to multiply their numbers by the flow of slaves purchased by them from Siberia, Circassia and adjoining lands.

The head of the Mamelukes came to be called Sheikh-el-Baland, or Chief of the land, and when supported by the Emirs he was all powerful and the Porte had to abide by his demands.

In the latter half of the 18th century Ali Bey was the Sheikh and he gradually reduced the Janissaries, the Osmanli prop, while he increased the court Mamelukes till they reached 6,000. Then, assuming independent power, he deposed the Ottoman Governor. Victorious also over Syria and the Bedouins he was recognised as Lord of the Holy Places by the Sherif of Mecca, yet after a brilliant reign he was eventually betrayed and slain in Syria.

The Era of Napoleon.—In 1798 Napoleon invaded Egypt with the ostensible object of assisting the Sultan by overthrowing the power of the Mamelukes who had now reduced Turkish authority to a mere shadow. Napoleon in his memoirs gives an interesting account of these Eastern horsemen. He says—

"Two Mamelukes would hold their own against 3 French, because they were better armed, better mounted, better drilled. They had 2 pair of pistols, a blunderbuss, a carbine, a helmet with vizor, a coat of mail and many horses and servants on foot to aid them. But 100 French Cavalry would not fear 100 Mamelukes, 300 would conquer a like number and 1,000 would beat 1,500, so great is the influence of tactics, order and manœuvres."

In fact nothing but the highest state of efficiency will enable our own civilised forces to cope with an enemy of this character in the future who may be, man for man, keener and calmer in action and infinitely superior physically.

At this period the Mamelukes comprised 12,000 horsemen commanded by 24 Beys who each maintained and equipped about 500 or 600 men. Each soldier was followed by attendants with a second horse.

Their horses comprised both barbs and high-caste desert Arabians, obtained from the Druses of Howran and from the Bedouins on the east of Syria and Palestine.

On July 4th, 1798, the first division of the French army which was fated to destroy the prestige of the Mameluke arms set forth by night into the desert south of Alexandria. Moving on Cairo it was threatened by Mameluke horsemen continually: at Chebreiss a charge of 800 of them was turned aside, but skirmishing continued until the decisive battle of the Pyramids on July 21st near Cairo, where Murad Bey with 10,000 Mameluke horsemen and a host of ill-trained infantry occupied an entrenched position, the right resting on the Nile bank at Embabeh, the left stretching towards the Pyramids.

Napoleon seeing that the 40 Egyptian guns were immobile, moved west to outflank the position from the desert. A confused swarm of 7,000 Mamelukes charged the French squares as they made their flank movement. They were met by French Artillery fire and volleys from the squares which were formed 6 deep. Those Mamelukes who were not mowed down by the pitiless fire attempted to break the squares by reining their horses back upon the bayonets, using their firearms, and furious at their ill-success, hurling the empty weapons at the heads of their foes.

A score of their choicest cavaliers perished in the midst of the squares. Those who were dismounted crept up to the phalanx of infantry cutting with their cimeters at the legs of the front ranks but at length the Mameluke army, in Alison's words, "thoroughly beaten fled in confusion leaving a rampart of dead men and horses around the squares—terrible proofs of the pertinacity and bravery with which they had fought. The losses of the Mamelukes were very heavy, while the French loss was only counted in hundreds."

Victorious in the combat of Sediman, Desaix's Division reached Assouan and the inscription recording the occupation of Upper Egypt remains to this day cut on the face of the cliffs at the First Cataract of the Nile.

After further fighting the French assumed the reins of government and even began raising an Egyptian army under French leadership.

Meanwhile Turkey declared war on France.

From March 18th to May 20th, 1799, Acre was the scene of one of the fiercest and most dramatic sieges in military history. Fitchett States: Napoleon had captured Caza and Jaffa and was about to attack Acre which lay between him and his ultimate goal, Constantinople.

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But the fanaticism of the Mamelukes still smouldered and a British force on its way to Cairo was surprised and heavily defeated by overwhelming numbers.

England, her object accomplished, evacuated Egypt in 1803.

The Massacre of the Mamelukes.—At length in 1805 Mahomed Ali Pasha of Egypt gained the supreme authority, and fearing the Mamelukes who now numbered 20,000 good fighting men, he took measures to get rid of them, but it was not till six years later that he put an end to the leaders of the race by a perfidious stratagem. The Beys and Emirs were invited to an entertainment in the citadel. On their taking leave, for the last time, as it too soon transpired, the outer gates closed with an ominous clang and every way of egress barred, the whole body, said to have been 470 in number, were shot down, by troops concealed upon the roofs and battlements and outside the windows. By further orders the multitude of Mamelukes in Cairo and throughout the land were pursued, slain or chased abroad. A spot on the citadel walls where one of the fugitives escaped by spurring his arab over the ramparts is still known as the Mameluke's Leap.

Some who were supporters of Mahomed Ali were spared and 2,000 under 18 years of age were incorporated in his body-guard.

Of the survivors of the general massacre some escaped to Syria, others to Dongola.

Some hundreds built a town in Lower Nubia and endeavoured to strengthen their force by disciplining negro slaves, but these were finally dispersed. Their last fastness was Shendy between Berber and Khartoum, now the headquarters of the Egyptian Cavalry: some died there; many were absorbed in the Jaali tribe of riverine Arabs, whilst others took service in the forces of Mahomed Ali that were going to the Soudan in 1824.

But the customs of the East are not to be abrogated by the mandate of an individual, and newly acquired or returned Mamelukes were in a few years again to be seen in Cairo till, in Arabi Pasha's rebellion in 1881, more than half of the officers of the Egyptian army are stated by Yakub Artin Pasha to have been Circassian Mamelukes belonging to the viceregal family. Some traces yet exist of this caste which was successively brave, cruel, artistic and depraved whose life-blood poured out in rivers has filtered deep into the desert sands leaving only a lurid stain to mark its course.

Many educated men of Mameluke stock are now in the Egyptian Government service, well satisfied to be employed under the aegis of the Pax Britannica and an infusion of Mameluke blood may be traced in certain families of the Abbaside and Berberi tribes of the Nile Valley. There are still relics of the vast armaments, the material of war, which was wielded to such purpose for centuries. Many antique weapons still encumber the arsenal at Cairo and may be purchased by the itinerant collector and in the Dervish Armoury,

During the investment a large Turkish force advanced to raise the siege. It consisted of the remains of the Mamelukes, the Janissaries of Damascus and Aleppo and an innumerable horde of irregular Cavalry. Napoleon was alarmed. Kleber was sent from Acre to join Junot at an advanced position at Nazareth. On his march he defeated 4,000 horsemen.

On the 16th April he moved to attack the Turkish camp at Mount Tabor and was met by 15,000 Cavalry and as many Infantry, whose impetuous charges were stubbornly repelled for over six hours till the arrival of Napoleon in person who, overlooking the field from a height, launched his Cavalry and Horse Artillery against those Mamelukes who were in reserve and with Bon's division in two squares attacked the remaining Turkish forces in flank and rear and drove them from the field.

On July 25th, 1799, a large force of Turks which had landed in Aboukir Bay was driven into the sea by Napoleon who shortly afterwards left for France.

At Heliopolis on the 20th March 1800 was fought the last great battle in Egypt between the Mamelukes and the French. Kleber led 12,000 veterans of France concentrated from all parts of Egypt. He formed them into four squares, with Artillery at the angles and the Cavalry in the intervals. Companies of grenadiers doubled the corners.

Denison writes: "An attack was made on the camp of the Janissaries in the village of Matarich which was advanced far in front of the Turkish army and it was soon captured and large numbers of its defenders killed.

"The Turkish main army then advanced to attack the French who formed a line of squares with the Artillery in the intervals and the Cavalry in rear of the centre ready to charge through at the critical moment.

"The battle commenced with the fire of the Artillery which was much more effective on the part of the French than on that of their opponents. The cannonading so galled the Turks that they prepared for a general charge. The concentration of their masses warned the French of the coming onslaught; 20,000 horsemen at full speed, shaking the ground with their thundering tramp was enough to try the stoutest heart. The French stood firm however while the Artillery poured volley after volley of grapeshot with hurried vigour into the advancing masses. The front rank were nearly all swept away by the storm of missiles which filled the air and the rear ranks dismayed at the carnage wheeled about and fled before a single musket-shot had been fired.

"The Grand Vizier rallied his troops and attacked again, but in a short time the whole Ottoman host fled in utter rout, leaving Kleber complete master of the field and of their camp."

He only survived to fall a victim to an assassin in Cairo.

On 21st March 1801, the British, with the loss of General Abercromby, defeated the French army of Egypt at Alexandria and on 28th August 1801 the French yielded to the British under General Hutchinson.

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after the battle of Omdurman were found Damascus blades, coats of mail armour, helmets and fire-arms just as they were described a century earlier by Napoleon.

Several sets of these arms and armour, with some Dervish imitations, were sent to Queen Victoria and the Kaiser William respectively.

Perhaps after the lapse of another century no vestige will remain but the strongholds and sepulchres of these slave soldiers and future generations will admit with scepticism the records of their existence.

In the words of Sir James Muir: "we search in vain for a parallel in the history of the world. Slaves have risen on their masters and become for the moment dominant. But for a community of purchased bondsmen, maintained and multiplied by a continuous stream of slaves bought, like themselves and by themselves * * * * * the entire governing body of the same slavish race; that such a state of things should hold good for two centuries and a half might at first sight seem incredible."

But this despotism of the gutter prevailed with little intermission for twice that period and its most mischievous issue was the abasement of Christians in the near east. In dealing with peoples to whom the name Ferengi is odious and who regard all who are not professed Musalmans as their hereditary enemies, let us remember that navies and armies are indispensable to inspire in them a desirable reticence. Napoleon's Adjutant referring to war said "Peace is the dream of the wise." We might say, that with nations whose religion is war, Peace is the dream of the fool.

NOTES ON HILL TRAINING.

BY MAJOR NIGEL WOODYATT, 3RD GURKHAS.

These notes make few, if any, references to books but simply record practical facts brought to light during *peace training* in the hills. Except where

Preface.

otherwise stated, they are based almost entirely on personal knowledge and experience, with here and there scraps of enlightenment gained by a little study or culled from the timely advice and suggestions of other officers. I hope it will be admitted that mountain warfare is the most instructive of all training as it is undoubtedly the most difficult. Troops that excel at it will have little trouble in proving themselves capable under any other conditions.

I will commence with some remarks on the physical training required to make one fit for hard work in the

I.—Preliminary Training.

hills. It goes without saying that one must be sound in heart, wind, and limb; and the great secret is not to overdo it at the start. Boys—like cats—are very hard to kill, and this may account for the rapid recovery, after a short rest, of the impetuous newly joined subaltern who rushes at severe climbs day after day to the immense amusement of the mountaineer and to the detriment of his own health. But with older men such folly is distinctly dangerous, and the result much the same as happens to the school master, barrister, and clergyman at home, who insists on negotiating a lofty peak the day after he arrives in Switzerland. The hill soldier comes down-hill very quickly—much quicker than we can manage—but always goes up hill slowly. [The immortal Shakespear realised this when he wrote:—"To climb steep hills requires slow pace at first".] Even in a race it is difficult to persuade him to run during an ascent for it is against his nature. And he always goes up on his flat foot. The uninitiated indulge in toe-climbing with a greatly increased weariness of the legs. After an altitude of 12,000 feet is reached, the rarified air will prevent any one going fast, and in many cases will necessitate a short halt at every hundred yards, even when moving at the slowest pace.

As a perfect training for mind and body, there can be nothing better than "Ju-jitsu." Captain Dopping-Hepenstal of my battalion went through a course in the London School and being an enthusiast has taught some of our men very successfully with a view to using them as instructors. The adoption of this art in place of our present physical drill, and perhaps gymnastics appearing very desirable, I will give you a few arguments in its favour for which I am much indebted to him. To begin with let me quote some recent remarks by Admiral Kamimura:—

"However expert a man may be in the technical points of a "Naval education, his service counts very little in time of war if he "lacks presence of mind. The training in Ju-jitsu not only developes

"a man's physical power and agility, but it also tends to make him resourceful in meeting all kinds of emergencies and surprises. When I took the cadets abroad on a navigation cruise I found those who were experts at Ju-jitsu were the most efficient and capable. Their physical development and their mental activity make them able to stand hardships much better than ordinary men. My impression has been further strengthened by the present war. I would recommend not only Naval men but all young men to devote some hours of their time to learning the art. The indirect benefit will be great in all ranks of life."

One cannot say at present whether it is desirable to teach Ju-jitsu to all classes of, say, the Indian Army. The Japanese evolved the system in order to give the little man the advantage over the taller and heavier one. Consequently agility of body and mind are the chief requisites. The big heavy man or the tall lanky one is at a disadvantage and therefore the system would probably require modifications to make it suitable for the taller races of India such as Sikhs, Pathans, Jats, etc. A tall man would possibly never become as *quick* as a smaller one, but his body would be naturally developed equally well and his mind trained to seize opportunities and to acquire that extraordinary alertness which is the chief feature of Ju-jitsu. But when we come to the Dogra, Gurkha and similar smaller men, we have *ideal* material to work on and such men should become every bit as good as the Japanese at their own game. Some of the advantages of the art are as follows:—

- (a) First and foremost is the mental development. Our system of physical training aim only at developing the body and not the mind, and generally the upper part of the body more than the legs. During a Ju-jitsu bout the brain is always working, meeting attack with counter attack and at the same time trying by a skilful ruse to lure the opponent to his downfall. An imagined opening is given in order that in attempting to benefit by it the adversary will lay himself open to one of the sudden unanswerable "locks" which make Ju-jitsu so formidable.
- (b) Judging by the results, pupils—out of sheer love of the game—continue practising after their tour of instruction is over. This can hardly be said of physical training and seldom of gymnastics.
- (c) The body is developed in a perfectly natural way all over, including heart, lungs and the muscles of the neck, ribs, etc. The exercise too is done in the open air, and the muscle made is good and natural.
- (d) Gymnastics with apparatus requires an expensive plant, whereas with Ju-jitsu a few cheap coats at Re. 1-8-0 each with a dhurri or grass mat or two are all that is wanted.
- (e) From a study of the art a good knowledge of anatomy is derived and instruction can be given as regards reducing ordinary dislocations.

- (f) Ju-jitsu is the science of rough and tumble and helps you to defend yourself in a tight place. Moreover the muscles developed and the alertness gained do not deteriorate when practice is left off. With gymnastics the opposite is the case, and after years of it you are practically little better able to defend yourself in the thick of a fight. The Japanese attribute their wonderful marching powers to Ju-jitsu and say it can be made a delightful exercise or the most strenuous in the world. The one apparent disadvantage is that instruction can only be imparted to one man at a time, though the others may learn much by looking on or practising together. As one instructor could not teach more than 4 to 6 men a day, the staff has to be large to commence with or the instruction proportionately slow, and unfortunately it is impossible to learn the art from a book, for these in most cases simply attempt to teach one a few tricks.

As regards dress there is no leg wear like a pair of "shorts" for hill climbing. Combined with "half-hose" (a

II.—Dress.

kind of footless stocking which can be pulled right up the thigh when cold) and canvas gaiters your legs are warm, comfortable, speargrass-proof, and free. Putties are excellent for those who can wear them and are much preferred by our men to gaiters, as supporting the muscles. The important point, still unsettled, is how to carry some kind of "overwear," which in the hills, is absolutely necessary, both on account of the frequent storms, and the danger of chills from a cold wind on the higher spurs after a hot climb. For officers one of Burbury's capes, weighing under 3 lb. and rolled up on the shoulders with cross straps over the chest is easy enough to procure and carry, but with the men it is a question of weight and expense, for the best waterproof material costs money and the common kind is very heavy. I find that on service scale our men carry about 55 lbs. on their person including the rifle, but excluding any outer garment. Now a hill coolie load in some districts—Kumaon for instance—is 50 lbs., along good roads, halting when he likes and for as long as he pleases and going his own pace. We ask the soldier to carry rather more at a uniform rate, across valleys, up mountain sides and possibly after some hours of this, to be ready to fight at the end of it. In these circumstances it is obviously inadvisable to adopt any heavy garment for over-wear or of a non-waterproof material which will increase in weight *when wet* such as the British Warm Coat. Taking it for granted that it is necessary to make the soldier partially independent of transport on emergency and provide him at the same time with some protection for wind and weather, the best solution I can think of is a light waterproof cape to be fastened on to the back with a warm jersey rolled inside. I can think of nothing lighter and its further advantages over other coats are, that in hot or wet weather it is preferable, and on emergency can be used as one side of a *tente-d'abri*. But to make him really

mobile—and surely we should aspire to this—the most vital of all his requisites is a pack, knapsack or bag. The long blue sling bag used by the Japanese would possibly be suitable, the ends of which pass over the right shoulder and under the left arm and are knotted in front of the chest. Strange to say the Gurkha in his natural state makes a similar bag of a thin blanket called “khadi” by knotting all four ends in front. In this he carries all his supplies.

The 5th Gurkhas at Abbotabad have adopted the “ryper sac” and swear by it. They have lately much improved this pack and I only wish it could be adopted now for universal use. The havresack would be unnecessary in addition. But to be self-contained the soldier also wants some arrangements for food. During the last Somaliland campaign the want of some handy cooking utensil was much felt, and the advantage held by one corps in possession of a small receptacle was reported on at the conclusion of the operations. Some regiments now have a small aluminium canteen capable of cooking food or making tea, very handy and very light, which can be carried in the pack or strapped on to the back, and used by both officers and men. Provided with this the soldier of the Indian Army can be independent of supplies for three* days if he furnishes himself with, (1) one day’s cooked food in his knapsack, (2) one day’s supply of uncooked atta, rice, etc., in the canteen, and (3) his emergency ration. This is surely an incalculable advantage for a three days’ fight, a forced march or vigorous pursuit after a tactical victory. For the emergency or iron ration, which will keep any length of time, I know nothing better for the native soldier than one made of the following ingredients, weight 24 oz.:—Atta, 14 oz., ghi 6 oz., gur 5 oz., milk 8 oz. The provision of these three requisites, namely, cape, ryper, sac and canteen appears feasible, so I trust these demands may not be looked on as the vapourings of a visionary. We now come to foot-wear. A great deal has been written on this subject and about foot-bandages instead of socks. Rope soles on boots are very good for the hill-side and officers can manage to procure them, but they soon wear out and renewals might be difficult on service. The ordinary ammunition boot with good Pathan nails is none so bad, and the majority of men seem to infinitely prefer socks to foot-bandages.

We now come to the work itself, but before taking its many branches separately such as scouting, outposts, retirements, etc., I would like to say a few words about some earlier instruction for which many parts of the hills are so admirably adapted. Some years ago practical soldiers began to think of a more advanced form of field firing and it occurred to one or two, that, where ground admits of it, tactical exercises with ball should be feasible and instructive. I believe it was General

* Note.—It has been pointed out to me that the men of the old Roman legions carried supplies for 17 days, and that Napoleon in one of his maxims says, that the soldier should never be without provisions for at least four days. In peace manoeuvres I have never seen the men carry more than 24 hours rations on their person, so that if they can now be independent of the supply depot for three whole days it will any how be an advance although far behind the mobility of two thousand years ago!

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W. H. R. & C. O. R. & A. S. R. & B. S. R. & C. S. R. & D. S. R. & E. S. R. & F. S. R. & G. S. R. & H. S. R. & I. S. R. & J. S. R. & K. S. R. & L. S. R. & M. S. R. & N. S. R. & O. S. R. & P. S. R. & Q. S. R. & R. S. R. & S. S. R. & T. S. R. & U. S. R. & V. S. R. & W. S. R. & X. S. R. & Y. S. R. & Z. S. R.

III. Practical work

III. **Practical work.**—The first step in this series was the making of a few words and phrases to use in the first and second parts of the lesson. These were shown on the board. Some of the words and phrases began to be used in the first part of the lesson, and the others were used in the second part. The words and phrases were written on the board with the student's help. The words and phrases were:

[illegible]

Scale about 5 Inches to 1 Mile

Contours at 50' V.I.

(approximate)

from Almora

Peora road

is 1 1/2 miles

Scrub

Bare

Scrub

From Almora Bazar

BRIGHTON CORNER

Cultivation

A Force advancing
at 6.15 a.m.

A Force at 8.30 a.m.

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Dening who first brought this training to the notice of Army Head-Quarter six or seven years ago and doubtless many regiments have done a good deal of it by this time. Arrangements having been made with the civil authorities to keep a tract of country clear, one unit is sent to each extremity of this area under a secret order. This may direct both to advance at a given hour, or one to advance while the other places itself in a really well made and bullet proof defensive position—which is not generally difficult to make, but takes time,—or one to advance and the other retire according to the ground and requirements. The units should commence work from 3 to 10 miles apart, and as a beginning should not be larger than a double company each side, or there may be a difficulty about finding sufficient cover. Let me take an actual manœuvre and describe it with the help of the sketch opposite. The country is fairly precipitous, unwooded, and with a fair amount of short scrub where not cultivated in terraced fields. The boundaries are the ALMORA—PEORA road and the R. KOSI, average distance apart being $1\frac{1}{2}$ miles. The rules of the game are roughly as follows:—Every Officer, N. C. O., and man carries a cloth bag* about 15 inches square. In this particular exercise—as will be seen directly—both forces are to advance towards each other, and take every opportunity of inflicting punishment. One side, say, "A", watching closely, sees "B" expose himself and sounds a long "G" on his bugles; "B" force then fills its bags with leaves, grass, earth or sand, as convenient, places them on the ground (each man exactly where he stood on the "G" sounding), takes cover with all ranks and blows the "Continue," "A" repeats, opens fire and when finished sounds the "Stand fast," on which "B" after repeating, comes out of cover, takes up his targets, and, squad commanders having collected their ammunition, all men whose bags are hit are sent as casualties to the dressing station. There are of course other rules such as the duration of fire at distant, long, and effective ranges respectively, measures for safety, etc., etc., and the manœuvre itself can be varied in a hundred ways. But to proceed. "A" force is ordered to rendezvous N. of the BRIGHTON corner at 6 A.M., "B" at GURARI Bridge at the same hour, when "special ideas" are opened. "A" learns that an infantry detachment of the enemy, strength about 150 rifles, arrived at GURARI Bridge at 6 A.M. and is moving towards him. His orders are to prevent the enemy, if possible, from reaching BARSOOMI before 7-15 A.M., but if foiled in this, to retire at that hour on to his former rendezvous. "B" gets orders to advance to BRIGHTON CORNER spur, clearing the country of the enemy. Only ground scouts are to be used, which will rejoin their units on a single "G" sounding.

Both forces advance at once, "B", in line, and "A", in lines of sections in file, an admirable formation in the hills as preparatory to a rapid extension into line. At 6-40, O. C., "A", who is close to BANIYA, receives information from his ground scouts that the enemy

* Or a piece of cloth rolled up on two sticks if preferred.

is crossing the high ground S. W. of LODIA village, and as soon as the line becomes exposed to view, (Y—Y) he sounds a long G. "B" then puts down his targets, takes cover and sounds the "Continue." "A" repeats opens fire at about 2,200 yards range, and, when he sounds the "Stand fast", "B" acts according to the rules referred to above. In the meanwhile, "A", in trying to carry out his orders to prevent "B" reaching BARSOOMI advances towards the irrigated cultivation to his front, but finding it is after 7 A.M. and that the ground consists of steep terraced rice fields, he retires to the BANIYA spur. As he reaches it "B" gains BARSOOMI and holding him up, comes into action at about 800 yards range. At the conclusion of this phase "A" retires at once. "B" can only follow slowly on account of the rice fields, but sounds the "G" to halt "A" at about 8-30 A.M. when the latter reaches the line X—X. On "A" coming out of cover to check his targets, "B" rushes forward to get to closer range, but unduly exposes himself and is held up by "A" at the line Z—Z, at a range of about 1,500 yards. And so on. After this phase "A" would probably gain his original place of rendezvous in safety and be entirely under cover. When desired a superintending officer can easily control the movements of either side from commanding ground on a flank by preconcerted bugle calls, field signals, or by heliograph, and thus cause either to advance, retire, halt, or move to a flank as tactical or safety considerations seem to require. Finally, I may say that the great advantage of these exercises is that such a number of important details can be practised, such as scouting, attack, defence, skirmishing, advanced guard, piquetting, retreat, hasty entrenchments, high and low angle fire, long range volleys, a fight continued without leaders, carrying wounded, supply and distribution of ammunition, etc., etc., and all under conditions as near as we can possibly get to those on service.

Perhaps the most important item in all warfare is the vital necessity of obtaining early and *reliable* information. To achieve this end picked

IV.—Scouting.

men are required with highly trained intelligence, abnormal powers of endurance and great quickness of perception. These "scouts," who are the eyes and ears of the army might well be of two kinds. Firstly, the trained specialist like Burnham whose education is self-taught and perfected before he is engaged, and whose senses are nearly as acute as the jungle-born native; and with men like this might well be associated the pick of our own Gurkhas, Bhils, Pathans or Zulus according to the portion of the Empire in which we are operating. Secondly and another type, the specially selected soldiers of our cavalry and infantry. It is with the latter we have now to deal for although every opportunity should be taken of employing mounted men when the country admits of it, still, as a general rule, scouting in hill warfare must be the work of the foot soldier. Now as regards this second type of scout, the only one of which I have any experience, it seems to me that his training and employment are not thoroughly understood. Beyond realising in a vague kind of way

that the scout must be an exceptionally level-headed individual combining much daring with a moiety of caution and cunning and who is to be kept continually in a hard state of condition, our methods of educating him for his particular branch are, in many cases, haphazard, and faulty. The literal meaning of the word "scout" is "one sent to listen", and this should never be lost sight of, for his first and foremost duty is to keep the Commander fully and early informed of all the enemy's actions. He should not be allowed or expected to fight. His duties, if properly performed, are arduous in the extreme and take place, to begin with, before actual contact. It is therefore madness to ask him to fall in with his unit in action. On the contrary, when serious opposition is met with, scouts should be withdrawn and, with the exception of those who may be employed watching an exposed flank, should be *ordered* to the rear to obtain some well earned rest before their services are again required. But instead of this, what do we often see both on service and at manœuvres? Time after time we find them used indiscriminately—for example in Tirah—as advanced skirmishers, as flank guards, as the rear-party of a rear-guard, the point of an advanced guard and as detached piquets at night to keep down sniping. This usurpation of the legitimate duties of the rank and file is not only obviously most undesirable, but can only lead to one of two results. Either the scouts must break down from over-work or else the peculiar functions for which they were originally formed must be neglected. It seems therefore necessary to point out the vast importance of peace training being conducted on suitable lines and for this purpose I would suggest the scouts of each battalion being divided into three classes. I propose to define each class and make some remarks about its particular mission, but I do *not* propose to go into detail regarding duties, selection, practical training, organisation, system of groups, equipment, etc., which have all been laid down and fully discussed in numerous admirable hand-books, pamphlets and lectures. I advise also that a practice be made of sending out young officers with scouts, whenever it can be managed, even if the party be ever so small. This both in peace and war. We first of all come to :—

CLASS I.—THE BATTALION SCOUT.

Picked men, enjoying exceptional privileges and kept up to a strength of about five men per Company by selections from class III. Their duties would be, for the most part those detailed for class II, *but* care is necessary that the *efficiency* of the Company is not sacrificed to the *glamour* of the scout. Too large a body should not be selected or you deprive the fighting unit, the Company, of its best men. As soon as information about the enemy's movements is *fully* known every intended bivouac or outpost line should be "screened" by them. Again, a few from each corps under selected officer, may be most usefully employed in the work of advanced guard cavalry. That is to say for information only and not for fighting.

CLASS II.—THE RECONNOITRING SCOUT.

A special selection from Class I. To work in groups of 3 to 6, get in touch with the enemy and never lose it. To be absolutely self-contained, and expected to send back frequent information about the enemy whether negative or positive. In peace training to be allowed no ammunition, to teach them that in war they must only fire in self-defence. Their object should be to get close to the enemy without being discovered and remain in constant observation. British soldiers might well be associated with Indian in this employment for the former would supply the intelligence, especially as regards transmission of information, and the latter the natural instinct, guiding power and innate capability of existing entirely on their own resources. Experiments in this combination have been attended with much success.

CLASS III.—THE GROUND SCOUT.

Four to eight men per Company. To cover the front and flanks as a guard against surprise, reporting at the same time any action of the enemy and sending back, by signal, negative information at stated intervals. They should not fire, except in self-defence, and in peace training would carry no ammunition. When the troops they are covering come into action, they will clear the front and form up in rear of their unit. They form a reserve for the "battalion scouts" enrolment into which body should be their dearest ambition.

The dress of the Battalion and Reconnoitring Scout for hill warfare should be much the same as the rank and file, except that he should be provided with rope soles or grass shoes, if possible, and be unhampered with a thick belt and pouches, as he requires little ammunition. I have already referred under "Dress" to overwear knapsack and cooking utensil which if essential for the rank and file are absolutely indispensable for the scout.

The best means of transmitting information from scouts, and indeed the question of communication in the field generally, is of such vast importance that all hill training is wasted if this is not carefully attended to, for every day's work emphasises the absolute necessity of constant news—negative or positive—regarding the enemy's movements, and of the impossibility of mutual co-operation if all units are not in touch. Probably the telephone will take a leading part in future wars especially as a means of connecting Brigade and Divisional Headquarters and Artillery, but I understand the Japanese found it unsuitable for inter-communication between infantry units in the attack and are adopting the Morse Code and regimental signallers. Fortunately visual signalling is now reaching a much higher standard than formerly, and a thorough knowledge of it by *all* officers, N. C. Os. and scouts in British regiments might well be insisted on; but, in the Indian Army,—even when of the best—the present complement is insufficient and it is therefore imperative that all British officers, and all native officers and N. C. Os. who are capable of learning should

V.—Communication in the field.

be kept efficient in signalling and semaphore. In fairly open country this will work well enough and with care and practice in the hills the action can be kept hidden from the enemy; but in close wooded country this means of communication is often impossible and the only alternative I know of is to fall back on messengers. I am afraid a corps of dispatch riders, as I believe the American Army maintains, is unlikely to be established, though the advantages are obvious, and it therefore only remains for us to take every opportunity of training all ranks in the transmission of field messages to obviate the danger of mistakes on service.

With an universal knowledge of visual signalling by all those capable of acquiring it, the difficulty of submitting orders or receiving information in the field is much reduced, but some system of simple "signs" in addition, easily sent and easily understood, is badly wanted, not only as being more expeditious, but also as most necessary for the Indian Army. It is impossible for us to teach all our native officers, N. C. Os. and men, or even all our scouts, signalling or semaphore, and yet we require the means of rapidly transmitting orders or information. The signals given in our training books are insufficient, nor is the waving of the arm or weapon enough to attract attention or easy to distinguish except at close distances. The system of signals with diminutive red and yellow flags described by Colonel Cox of the 69th Punjabis in the Indian U. S. I. Journal about two years ago has been worked successfully in many corps, and I think we owe him a deep debt of gratitude for trying to solve, in part, the difficulty of communication in the field. By this system, as doubtless you know, the ordinary signals given in Infantry training—probably only evolved in the first instance to prevent shouting and noise—can be indicated by the *yellow* flag to denote necessary action by one's own troops, while the same with the red flag apply to the movements of the enemy, and both can be seen from a considerable distance, and easily attract attention. Even in thickly wooded country their use in the hands of a messenger frequently saves him a long detour and the troops a considerable delay. But I would go further than Colonel Cox and press for a universal code, both to prevent confusion and to ensure the utmost rapidity in transmission. Now it may be urged that the "little flag" like a "little knowledge" is a dangerous thing. That, *firstly*, not only might the waving of these tiny ensigns all over the hills be easily discerned by the enemy and the messages possibly read, but that *secondly*, a certain risk is involved by putting the means of sending orders into the hands of irresponsible persons, who, under the pressure of excitement might purposely or inadvertently exceed or pervert their instructions. As regards the *first*, additional flag-wagging may increase the difficulty of finding suitable cover from which to send messages unseen by the enemy. But I maintain, (1), that, as in ordinary signalling, so in this case, the selection of cover is easily taught and in the hills presents little difficulty; (2), that it is beyond CLOSE touch with the enemy when the majority of orders are issued and most information is received; (except in the case of the scouts who get pretty "slim"

and rapidly understand if their messages receive no answer when they are apparently read); (3), that the flags are very small, can be carried furled in a khaki cover and used when ordered, without withdrawal, in conjunction with the head dress or a small branch, and (4) that it would have to be a very smart enemy to acquire a knowledge of not only his own codes, but possibly Morse in addition, and the code I am referring to as well. Number two objection regarding the danger of unauthorised messages, applies equally to almost every system and the designation of transmitter and addressee being necessary, is a safeguard, in addition to such other standing orders as may be indispensable. Finally, it seems to me that although we must always venture something in war to attain our ends, yet the gain, with well trained troops, would be infinitely greater than the risk.

While on the subject of communication and of flags I may mention that different coloured flags for each company are extremely sound as helping to identify units at a distance and as an aid to detached parties and individuals. They can be carried by a bugler and furled up when on the move or in presence of the enemy. In the same way tiny coloured ensigns for the kit mules are invaluable and a small Union Jack carried by the Bugle-Major will show one's Artillery that they have their own troops in front of them. One bugler in each company should also carry a megaphone, for although they are terrible weapons in the hands of an excited man they are nevertheless of the greatest use on many an occasion.

A good deal of literature and some lectures have been devoted to the subject of holding the commanding heights on the flanks of the line of an advance or of a retirement, but I only intend to refer here to the points brought forward, or discussed, during actual training. If the route lies along a valley, both sides of which have to be piqueted, it is best to give the work to one unit and thus avoid dual control. [This should be the rule, but very difficult country may require an exception in the shape of a larger body, entirely independent, on each flank.] The troops that are in advance usually provide the men for this duty and leave small piquets in observation which after joining the rear-guard when it has passed their position, unite with the main body or go straight on to camp according to circumstances whether it is an advance or a retreat. It is the strength of these piquets, manner of withdrawal and safe juncture with the rear-guard which seems to demand the most attention, and the main essentials are, (1). to employ as few men as possible in each, (2) to provide suitable support, (3) to avoid mixing up units and (4) to ensure, by frequent training and simple standing orders, that no piquet can possibly be forgotten and cut off. Many regiments which have the opportunity and ground for practising this kind of warfare make it a standing rule for each piquet-commander to leave a file of men with fixed bayonets at the point on the column's route where his unit will rejoin; and in addition they provide a

red flag in charge of a N. C. O. and a few men to be carried with the "rear party" of the rear-guard, to enable the flankers to know when they may safely withdraw. These bayonet sentries hold written information for use of O. C. Rear-Guard as to the strength and position of their picquet, with which they should be in constant communication, if necessary, by means of connecting files.

The small party with the red flag—which bye-the-bye should take some stretchers or dandies—as it proceeds along the column of route, will invariably pass the bayonet sentries of the rear picquet—or line of piquets, if there are positions on both flanks—and wait at the *one from rear* until the rear picquet comes in, thereby enabling it to retire by the quickest route as also assisting the supports in the withdrawal, and ensuring the return of every one. These withdrawals must of course be carried out by dribbles and should be left to the man on the spot. He knows the position of the rear-guard by information from his bayonet sentries, and being in direct observation of the enemy is therefore in the best position to judge of the moment to retreat. A premature retirement under the obligatory orders of the O. C. Rear-Guard may mean disaster and a costly reoccupation of the ground too hastily abandoned. A report must be made by the picquet commander to the red-flag party that all the men have come in, and again to the O. C. Rear-Guard. It has, I believe, been pointed out that in a retreat along a valley this constant reporting might mean the assembly of too large a number of men and consequently a bigger target for the enemy. But it must be borne in mind that it is only necessary for the picquet commander *himself* to report to the O. C. Rear-Guard. This officer will always have a screen between himself and the enemy and in addition to the control of guns or Maxims, a formed body under his immediate command either to reinforce piquets, or rear party, or else take advantage of any false step of the enemy which gives an opening for hitting back.

In mountain warfare the distribution of a force in retirement

VII.—Advance and Retreat.

much resembles that of an advance because similar measures for holding commanding ground are necessary in both cases. The unit detailed for this work frequently gets entirely used up in furnishing flanking piquets and has to be replaced from the Main Body. These piquets, as stated before, must report to the rear-guard to ensure no men being left behind, but to prevent confusion and avoid a large target they should then move on at once and not remain there. The enormous advantage of this is, that the men who may have borne the burnt of the fighting for a considerable period get their turn of rest and take up their position in the column out of reach of the enemy. It matters little what name we give the portion which leads the way in a retreat and which in a forward movement we call the "advanced-guard," but, to prevent confusion, let us call it the "*advanced party*." Now we have most of us been taught in writing orders for a retirement to detail a reliable officer with the "*advanced*"

party," who, marching early, receives orders to block roads, prepare bridges for destruction, select successive positions for defence, etc., etc. But, in hill warfare, and especially in the case of a retreat along a valley or river bed which the roads generally follow—or which must be utilised on account of the baggage animals—some modification of this arrangement is required. It is impossible for this party to continue crowning successive heights, or prepare on them successive positions which might take hours for the troops of the main body to occupy, and which on arrival they might, likely enough, find in possession of the enemy! It is therefore imperative to arrange otherwise for these flanking duties and is perhaps advisable to make the leading portion above referred to so strong, that it can perform the duties of an advanced-guard or advanced party, as the case may be, and *also* protect the flanks. In both cases arrangements should be made to replace it when expended. Speaking generally the main difference between an advance and a retreat, is, that in the former all opposition is met by the advanced troops who either brush it aside or await orders for a regular attack. In the latter the opposition may continually increase as the enemy becomes emboldened by the retiring movement, then the utmost vigilance is required to prevent flanking parties being cut off and to cope with a sudden appearance of the enemy on the flanks of the line of retreat.

Although retirements in the hills are often assisted by the numerous strong positions one can hold in succession, still, the labour of occupation is often so great, the danger of detached parties being rushed so imminent, and the existence of numerous side valleys—capable of concealing a turning movement or ambuscade of an enemy—so dangerous, that, with an enterprising adversary the operation becomes a very difficult one. But even so, in the majority of cases, and especially on the N. W. Frontier, it seems unsound to keep on running away *without hitting back*. After one or two retirements, a carefully laid trap of a company or two concealed behind a favourable position with an invisible man as "look out" and "magazines" ready will make an enemy pay dearly when descending the opposite slope in pursuit. While a few determined men hidden in a suitable spot, with fixed bayonets, will make an overbold opponent very cautious in future. Cold steel has a wonderful moral effect and nothing is said to pay so well as a prompt charge when ambuscaded oneself or when surprising snipers. A retreat down a valley or river bed, with the adjoining heights crowned, is easier than one down a hill and then *across* a valley. But the latter has to be undertaken occasionally say, when foraging, and with a concealed enemy waiting for you to go is a very difficult operation indeed. Its success must depend largely on getting a good start by feinting and meanwhile withdrawing the greater part of the rear picket line unobserved. In this case, or indeed one might say in *every case*, always stick to the spurs, avoiding like poison all nullahs

VIII.—Retirements followed by the foe.

and ravines unknown to you. Never allow an officer to "trail his coat" and lag behind, for his life is much too valuable to throw away. I regret very much that I have had no experience of artillery when training for this kind of warfare, but although I may possibly be wrong, I should be inclined to use them as I would my maxim and keep them, as a rule, on the main route to check the enemy with long range fire and relieve the pressure on the flanks. I am referring to a retirement. And finally, we must not forget that casualties will and must occur, wounded men cannot get away and have to be carried, therefore keep stretchers, dandies and riding ponies handy. To convey them to these, "pick-a-back" is the best way. A casualty fixed up thus, with a pair of patts to keep him there can be carried down hill without much difficulty and a spare man alongside takes the rifles of all three. But have the ammunition left behind and during the training teach this casualty party to retain only twenty rounds between them.

The supply of ammunition in the field is much facilitated in hill warfare by the fact that it is seldom impossible to keep it close to the troops, if the transport consists of mules. Each section is

IX.—Distribution of ammunition.

now self-contained and takes with it in the field, at all times, one pack mule carrying two boxes of ammunition, which gives about 100 rounds per rifle in addition to the 100 carried by the soldier. The regimental reserve, of approximately another 100 per rifle, is usually carried by camels, and with the Divisional Ammunition column providing 175 and the Ordnance Field Park 225, we get a total of 700 rounds per rifle carried on field service. It is of course most necessary for each unit to keep its section reserve ammunition close at hand, but before any large expenditure is likely to occur it is a good plan, if feasible, to fill the men's pockets and havresacks up to say, 200 to 350 rounds, extra, per man from the regimental reserve. Access to this in the hills may be very difficult during an attack or retirement, and therefore it is as well to husband your section reserve as long as possible. The amount a man could be asked to carry must depend on the work before him, but with bags or spare havresacks he could, for a special task, take a large addition to his normal quantity. Infantry training lays down 600 rounds as the limit for the ammunition carrier, but a good deal more can be taken under ordinary circumstances. It is advisable to alter the carriers regimentally so that the weight comes on the hips, and the packets do not flop against the thighs, as is often the case. I have seen it suggested that during a retreat—when the supply is so difficult—ammunition should be deposited for the firing line to pick up under signalling instructions, as they retire. This may be worthy of consideration, but I should be nervous about it myself on the N. W. Frontier. One petty detail on this question should never be forgotten and that is to ensure by constant training that the ammunition boxes are so roped that they can be at once opened without moving the ropes.

In very mountainous country, the ground often permits the employment of comparatively few men on outpost duty, as roads, paths, passes, prominent features, etc., etc., can be so occupied as to give—with efficient patrolling—ample protection against surprise. It is most advisable to use the body of battalion scouts in the manner referred to under that heading, namely, to form a screen in front of the outposts as they are being posted, and to sally forth for the same purpose every morning before day light. Having made oneself acquainted with the ground the line of outposts is to occupy, I have found it saves endless delay to decide at once, as advised by Griepenkerl, which is the most important road or path passing through the position; then place a support on this—usually a double-company—which, with its piquets, will form a section of the piquet line. After this the division of the rest of the position into the number of sections required becomes fairly easy.

In savage warfare, a system of piqueting the adjoining heights is usual. These piquets require to be of such a strength and so well entrenched that they are entirely self-supporting and able to rely on their own resources to prevent or resist a sudden attack, and should be so posted that each can provide mutual assistance to another by sweeping with fire all dead ground in its vicinity. The preparations for making themselves secure would be much on the same lines as those for an entrenched camp referred to under the next heading. When posting these piquets every precaution is necessary, and while in standing camp their relief should be made at irregular intervals, in order to deceive the enemy.

With the assistance of the Manual of Military Engineering and other authorities, the preparation of an entrenched camp would appear fairly simple, but in practice it is surprising what difficulties are sometimes made and what delay occurs before much work is actually started. Having fixed the position of your camp agreeably to the exigencies of water supply, etc., it is of course necessary first of all to arrange your perimeter according to the strength of your force, the features of the ground and the number of men available for the defence, exclusive of the general reserve. I should also add as regards the site for the camp that the greatest care should be taken to guard against surprise, or against an overwhelming and sudden attack. For instance, when obliged by circumstances to camp on low ground, or in a wide nullah with commanding heights on both sides within, say, 2,000 yards range, construct your camp under the shelter of one of the hills, and piquet the same very strongly. You will then feel perfectly safe as regards this height, and may even escape all annoyance from the other if it is out of range. Attention will have been given to the selection of an outpost line, or the posting of detached piquets, and next will come the construction of the trenches; “dug-outs” for men and ammunition; shelter for followers and animals; positions for artillery and machine guns; obstacles;

communications; division of the "sections of the defence"; egress for counter-attack; blunting of salients, etc., etc. As regards trenches, it should be noted that frequent *traverses* are necessary, and that the width of the trenches must depend on the kind of fire that will be brought against them. When opposed by an enemy armed with modern artillery they must be deep, otherwise they may be broad and luxurious if time permits. When tents are used and pitched in the trenches as a protection against weather, the ridgepoles should run parallel with the trench, and the front fly be thrown back at dusk over the top of the ridgepole as a shelter from the dew, but at the same time leaving the front open. If all these and many other details are carefully thought out and the tasks allotted to separate units, each under an officer detailed by name, a very formidable position can be prepared in a short time, in which the troops will await the enemy's attack not only with confidence but also in comfort. The perimeter should be so constructed as to allow of the reserve remaining undisturbed in a suitable spot for the express purpose of being ready at dawn to make a counter-attack on any night disturbers. We have all of us read, "*the attack slackened at dawn and the Pathans drew off.*" But why let them draw off unmolested? Drugged as they probably would be, with "charas" or native liquor and unable to effect an entrance into the camp their main idea is to get away quietly before the sun is up; therefore a vigorous pursuit with fresh troops might, on every occasion like this, have the happiest results and maintain predominant, the principle of active aggression and not passive endurance. Other points to be attended to are:—(1) The formation of local reserves, say one section in every company, to resist the enemy, with the bayonet only should he succeed at night in penetrating the perimeter. They also must be entrenched, for theirs is a more nerve shaking duty even than manning the outer line, where it is at least permissible to fire. (2) A "section of the defence" should contain any salient in its *centre*, to avoid dual control at one of the weakest points, and the commander of each section should choose a central position for himself. (3) The section reserve ammunition should be kept in "dug-outs" in the trenches, and the regimental reserve in a spot equally accessible to all. (4) Machine guns may sweep the approaches, and be posted at the salients. (5) Loop-holes require much attention, as does head-cover, for in spite of much exhortation the former are frequently made so carelessly that they are not only most conspicuous, but a proper field of fire is quite neglected. Each one should be tested before completion, they should be made irregular and always screened—especially those in walls—on the inside, with a blanket and stick, or some other contrivance. The head-cover one often sees provided is worse than useless, it is dangerous, and more often than not consists of a few light stones put together like a house of cards. Continuous head-cover, such as thick beams or large trees piled together and interstices filled with stones, etc., and the whole banked with earth leaving a slit to fire

through is infinitely better than loose rocks or stones, even when of a goodly size. Finally, the possibility of reverse fire should always be considered and protection given, where not already provided by natural features.

As regards the preparation of a defensive position which it is necessary to hold at all costs for a certain period of time, and in which an *active* defence is intended combined with a real hot counter-attack, the hills afford some advantages combined with certain drawbacks. The construction of a false front is easy, and deception in general much simplified; also, by holding the salients with a cross-fire on the re-entrants you can utilise fewer men and therefore take up a much more extended front, when such is required. Moreover, the existence of many prominent features may assist you to secure one, or possibly both, flanks, and the nature of hill country generally will help you in acquiring cover for supports and reserves. Trenches too can be concealed and so constructed that while the occupants are safe from the effects of the enemy's artillery, they can, by their fire, ably defend the position against an infantry assault. On the other hand, however, the difficulty of reinforcing any special point and of making communications will be much felt, as well as that of bringing off a successful counter-attack. There is also the possibility of "dead ground," and of a good deal of plunging fire. As machine guns must have cover for withdrawal they will generally be placed in re-entrants whence they can sweep the approaches to the salient with a cross fire. The great secret of early and effective action is to tell off your "sections of defence" as soon as you can and appoint a reliable officer to each. Having done this it is sound to have a good look at the position from the enemy's point of view; imagine how you yourself would attack it, and then arrange your defences so as to frustrate his every move.

I hope I shall not be accused of saying too much about saving one's own skin during retirements and in defence, for I would have you remember that in our small wars in the hills it has usually been during a retreat or withdrawal and when camped, that our reverses and severe losses have taken place. I may also add that in my remarks on the above subjects I have emphasised the necessity of being in all cases aggressive and never patiently enduring. Napoleon says "In mountain warfare the assailant has always the disadvantage." We have seldom had the opportunity of testing this maxim when opposed—as was generally the case—by an enemy who always retired when his flank was threatened and never stood to take any punishment. But I think we should fix our minds on the fact that we may be engaged against an European enemy in hilly country, who will be prepared to take and give any amount of punishment and against whom it may be necessary to suffer the very heaviest losses before we have gained our objective. As I am remarking in

XIII.—The Attack.

some notes on "Manceuvres" later on, (heading XV, para. 16) it is necessary to try and manœuvre the enemy out of any commanding heights near his position, and circumstances may demand that in some cases this takes place before the attack, and in others *during* the attack, that is, combined with it. Again, in the same notes I have mentioned the danger of a disconnected attack; and in retirements I have said that all ravines and nullahs unknown to you should be avoided like poison, but these are safe enough in the attack, *if*—and this is absolutely essential—the commanding ground is held, and will be of the greatest use as cover for troops. Let us suppose that you have made your final dispositions for attack, that the enemy's fire has been sufficiently subdued to allow the infantry to advance and that you are attacking him in position on commanding ground. I think I might say it will invariably pay best to combine a *holding* attack with a turning movement or else a flank attack; * that is to say, you hold the enemy with a *secondary* attack while you direct your *main* attack against the point you have fixed on; but, on occasion, it may be necessary to make a frontal attack assisted by a feint elsewhere. Whatever course is decided on, further action must be guided by certain leading principles which have been mostly brought to notice during training and which are briefly as follows:—

(1) Think what the enemy expects you to do, and if possible do the opposite.

(2) Try and fathom his intentions. If he is likely to remain, time the flank attack to arrive early and so accomplish his destruction. If he is likely to retire arrange to cut him off.

(3) When an enveloping movement is attempted always *time* the simultaneous attack and if either advance is prematurely arrested let the nearest column at once render support.

(4) Undertake every attack with the fixed intention of not only turning the enemy out of his position but also of punishing him as severely as possible.

(5) Utilise *every unit*, but always keep a strong reserve under the Commander's personal control to use as circumstances may demand, or for the purpose of pursuit.

(6) In the hills supports and reserves can be kept much closer to the firing line than in a flat country, and opportunities frequently occur of covering and assisting the first line by fire; therefore never neglect this with the supporting bodies—and when they are absorbed,—by the rifles of the Commander's general reserve.

(7) Combined action is a vital necessity, therefore intercommunication must invariably be maintained.

(8) As it is most difficult in mountain warfare for the Commander to keep any personal direction of movements in his own hands,

* NOTE.—I understand a flank attack or "envelopment" to be a movement which takes place under the eye of the G. O. C. on the field of battle, whereas a "turning movement" is outside this.

it should be a principle never to detach portions of your force until you have the most positive information.

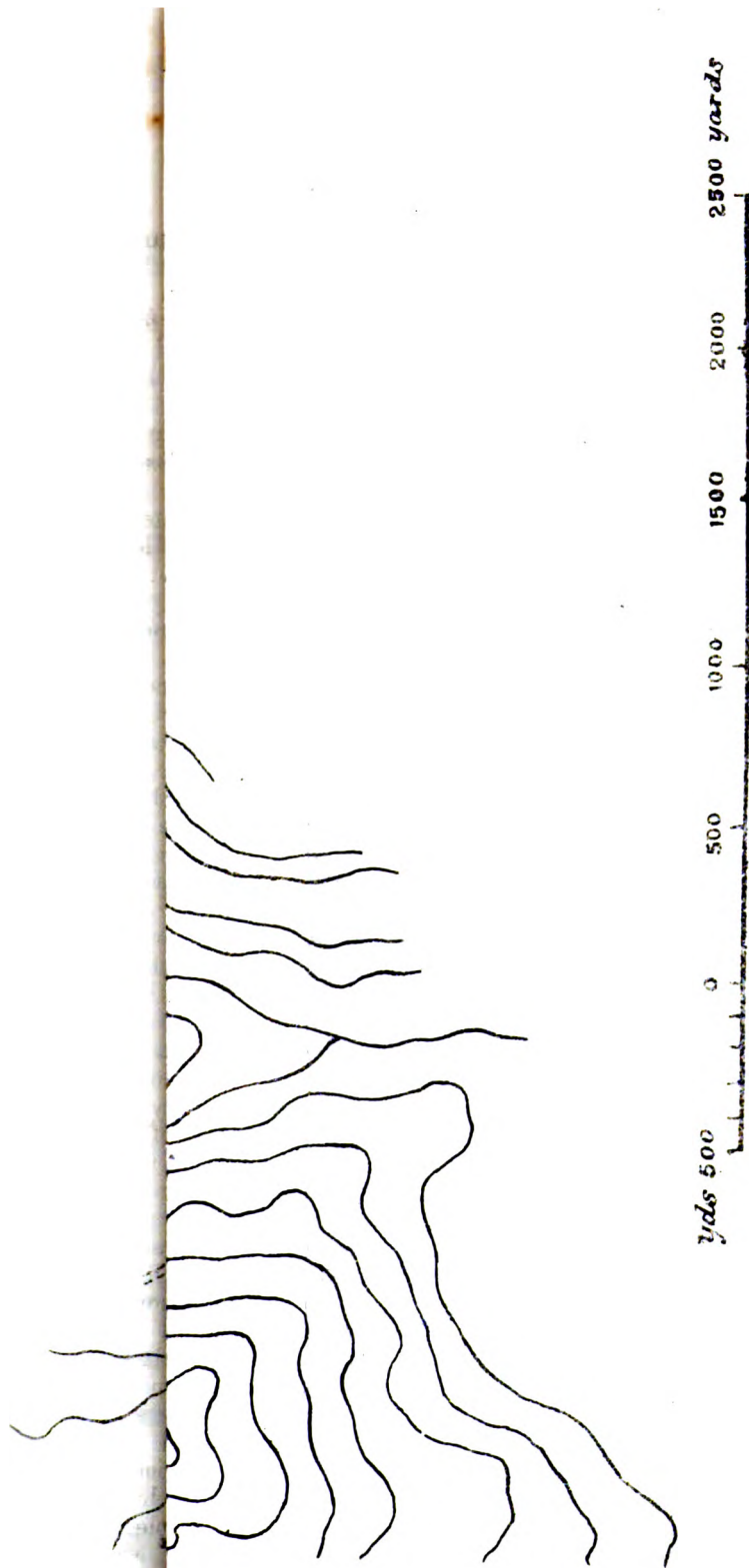
(9) Always precede any movement of troops by a few scouts, and never advance from high ground with a formed body until the next commanding feature has been reported clear. This should be a general rule and not confined to the attack alone. With a battalion, for instance, a few scouts should *invariably* be round about it keeping watch and making frequent reports. When the battalion halts these scouts become observing picquets.

(10) Against a frontier foe, the combined movements of converging columns should be most successful, for with good leaders they present no insuperable difficulty, and as a means of real punishment are unsurpassed.

(11) Lastly, remember the pursuit and that your object is always the *destruction* of the enemy.

It is often impossible to hastily entrench in very rocky hills and moreover sometimes unnecessary as excellent cover can be got without. But at the same time there are frequently occasions when better cover can be obtained by doing so, and I believe experiments are now being made with various tools to enable the soldier to throw up some shelter even when lying down. Each man should certainly carry a light tool adapted for excavation while in the prone position, but I trust the larger entrenching tools will still be carried on mules for more extensive work.

The feasibility of night marching in mountain warfare in close proximity to an enemy watching all the roads and paths depends entirely on the nature of the hills and valleys to be encountered. Should the operation entail the crossing of one or two wide valleys or the climbing over minor features running at right angles to a main feature; or should the country be much wooded or very precipitous, then, the movement when you are within reach of the enemy becomes a most difficult one, however well the ground has been reconnoitred beforehand, and is apt to be a very dangerous experiment. But, on the other hand, if a long ridge will take you to your destination, or if the country is bare and open and reliable guides are procurable, you can make your preparations with a lighter heart. Although it is true that only troops trained to it should be used still I believe much in the advantages to be gained from night operations and troops might be exercised much more than they are in carrying them out, as they seem likely to play a very important part in future warfare. For instance, the occupation of an advanced position at night preparatory to an attack at dawn, or to gain some tactical advantage by the seizure of a particular height. I have successfully tried a system of "back laying" by means of lanterns both in the hills and on the plains to enable a force to reach a fixed destination by night and know exactly when it has arrived there. It seems to be capable of still more development and



Scale 3" = 1 Mile.

Contours approximately at 100' V.I.

should be valuable for a sudden surprise over a comparatively short distance. It may be worth while to describe it briefly.

Please see the sketch opposite.

When camped at "A", you wish to occupy the SITOLI ridge at night unknown to the enemy who nightly patrols the main road to "A." Enemy is bivouacking about two miles west of SITOLI and knows you are at "A." Taking signallers you reconnoitre SITOLI and find two impassable ravines between your camp at "A" and the position at the South end of SITOLI hill (an old Gurkha fort) which you wish to occupy. But a temple X is visible from A and would do admirably for your objective. The country is bare and unwooded. You helio from X to A to fix up two long poles about 200 yards apart, aligned on X. You then withdraw to a point Y, and from there also align two bamboos on X. On arriving in Camp A you align two poles in a similar way on to Y. That is, there are three alignments as shown. Before marching at, say, midnight, you fix two lanterns at A on the poles aligned on X and two more on those aligned on Y. Keeping these two last *covered*, a selected officer leads the way to Y; after arriving there you fix two more lanterns on the bamboos you aligned on X and continue your march in the same way until the intersection of the lights AX and YX give you your objective. The officer who leads has a bulls-eye lantern in a kerosine oil box open towards the column, and carried, slung on a pole, by two men. With only one man carrying it, the light might swing round and be seen by enemy's patrols. In a flat country, especially on a large sandy plain, this method of marching could be carried out by means of two sets of large lanterns a mile or so apart aligned by bearings, the intersection of which would give the point it was desired to reach. I saw this successfully worked at Pur Camp some years ago, and was much impressed by it.

So far as my personal knowledge goes little opportunity is taken of exercising several units together

XV.—Manœuvres.

in the hills when located in the same neighbourhood, or even in the same station. The question of expense may occur in the former case, but the practical test of strong contingents from two or three regiments maintaining themselves for a very few days at a time while manœuvring under a general idea would be interesting. Given the right time of year, a suitable cooking utensil and a good blanket, the outing ought not only to be inexpensive but instructive and enjoyable. In fact it is impossible to over-rate the advantages of such outing to all ranks. A single trial will demonstrate, how much is learnt and how the instruction gained is of real practical value. Such tours are occasionally undertaken by companies, or double-companies, and even battalions, but the point I want to emphasise is, that they are very seldom attempted by a larger unit, and in two, three or four battalion stations in the hills I daresay the number of times in a year the whole garrison manœuvres together, with a night out, could be counted on

Scouts should always be warned to give information to the nearest unit of their own side.

8. Although troops moving in advance should keep as much as possible to the main ridges, let them avoid the *crest line itself* on every occasion; and this not only requires care as regards moving along or over it but as regards *firing from it*. Leave the crest line alone, for generally speaking, and especially if the hills are wooded, the enemy's side is the better one to shoot from.

9. When absolutely obliged to cross a ridge or saddle under the enemy's fire, heavy loss will be less likely to occur if the men are taken over at a rush in widely extended order, than if let loose one by one on the same path.

10. In framing orders, as a Staff Officer, never forget to allow officers commanding units time to give their men some food and rest before an attack or after an early advance or retirement.

11. Ask O. C. Units to always arrange, if possible, for their men to have one, or one and a half, days' rations with them in addition to cooked food for the current day, as well as some kind of over-wear. It is useless the troops only taking out the cooked food for that day. This is generally eaten early and should they remain out for the night, there is nothing left! The aluminium utensil, referred to under "Dress," is primarily intended for cooking with.

12. The section ammunition reserve should invariably be kept close to the unit.

13. In the hills many Umpires, and those active ones, are required. Some might be permanent and others consist of "casualties" detailed as opportunity offers or day by day. The permanent ones are perhaps better camped alone in some central position, with one detached to each force with which he will remain until relieved. Casualties should be much more freely made including C. Os. of battalions and sometimes the G. O. C.

14. When during an advance the country changes from bare to wooded, supporting bodies must be brought up much closer.

15. And lastly conceal all movements as much as possible and try to deceive the enemy in every way.

In these notes I know I have omitted much, and at the same time referred to a great deal of petty detail which is very old. I console myself with the oft-repeated quotation, "There is nothing *new* in the world but what has been forgotten."

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THE APPOINTMENT OF NATIVE OFFICERS IN THE INDIAN ARMY.

BY CAPTAIN A. L. BARRETT, I.A.

Before commencing this article the writer must crave the indulgence of the many officers of far more experience than himself who may read it.

Even if they are unable to agree with his arguments, he hopes they will consider the opportunity offered for discussion sufficient excuse for his bringing them forward.

It is submitted that the Indian Army is at the present moment approaching a time when considerable changes will have to be made in the present system of appointment of its Native Officers: and above all in the case of regiments recruited from frontier tribes.

The men in these regiments are to a great extent illiterate or, at any rate, they have received whatever education they are possessed of since entering the service and through the medium of the regimental schools.

The requirements of modern war, and the great width of front which armies now occupy, in comparison to what they formerly did, tend to throw more and more responsibility on the Native Officers, and call for increased initiative, self-reliance, and skill on their part.

They may often find themselves far removed from any possibility of consulting with their British Officers, and the decisions they then arrive at may seriously affect the whole course of the operations.

It becomes, therefore, continually more and more necessary that they should be thoroughly well grounded in the science of their profession.

By this it is not meant that Native Officers should become educated Babus, able to read and write English, or crammed with a lot of unnecessary book-learning. This would only lead to a class of men in the commissioned ranks very different to that requisite for the good of the service.

But it is claimed that every Native Officer should be able to read and write fluently in Urdu, and that, through the medium of that language, he should study his profession.

Moreover, it would seem only right that so as to be thoroughly competent to watch over the interests of his men, he should be capable of understanding his company accounts, and not be at the mercy of his Pay-Havaldar.

It may be argued that these accounts are all subject to the supervision of the Double Company Commander. Very true: but it can be taken for granted that many little things happen in a company which never come to the ears of the Double Company Commander: these are just settled, without reference, by the Native Officer to the best of his abilities.

Again, many officers of the Indian Army will perhaps agree that one of the weak points in the discipline of that Army is the want of a well marked line of social distinction between the Native Officers and the men in the ranks.

The present practice is to promote men to commissions in the same regiment in which they have performed all their rank service. It follows that many, as a matter of fact, that most of them, have intimate friends and relations serving as privates and non-commissioned officers in their own company, and it is with these that the Native Officer, for the most part, associates after promotion.

This state of affairs leads to an utter absence of caste-sentiment among Native Officers as such, and to a great deal more *blatant* and patronage than is for the good of the regiment or the service.

Another apparent weakness of the present system is the idea that gradually creeps into the heads of the men that promotion goes by seniority, for it is of course quite hopeless to expect them to understand that a man, who makes an excellent non-commissioned officer, may be utterly incapable of carrying out the duties of a Native Officer.

The result is that, where the Commanding Officer is such a man, he is hard-hearted ruthlessly to pass over an unsuitable man a long time; if injustice and dissatisfaction remains not only with the man himself but also with all his comrades.

Sometimes, however, it may happen that the Commanding Officer is unwilling to supersede a man who has done many years of excellent service. He may then promote him in spite of the fact that he is not absolutely the best man available, and in the hope that as soon as it is done he will take his Native Officer's pension. This is often very far from the idea of promotion as such, and it then becomes a very difficult matter to get rid of him.

Whether the resultant inefficiency of certain Native Officers is worse, the dissatisfaction caused by suppression is an open question.

It is hoped that most officers who may read this article will agree that there is at any rate a certain amount of truth in the statements made above.

It remains then to find out whether there is any way by which these weaknesses can be remedied.

A year or so ago it is believed a scheme was mooted with reference to the starting of a college in India, somewhat in the line of Sandhurst for the training of Native Officers. What the fate of this scheme was is not known to the writer, but it was rumoured at the time that the general feeling of opinion was adverse to it. It is said moreover that the chief reasons of many who opposed it were—

(a) that too many liberal commissions might be granted,

(b) that Regimental Officers who had been responsible for all the native training since his enlistment, would lose

his services, and the result of their own care and trouble just as he was becoming most useful ;

(c) that the Native Officers would not have the same *esprit de corps* as under the present system ;
and

(d) that they would not have the same intimate and personal knowledge of their men.

Let us examine these objections in turn.

With reference to—

(a) "*The question of direct commissions.*"—Past experience certainly shows us that the granting of direct commissions has been in many cases unsuccessful. But what reason is there to suppose that they would be given through the college in any greater numbers than at present ? Or at any rate until the classes from which the Indian Army is recruited receive considerably more education in their youth, that is to say, prior to their joining the service ?

When this does happen there doubtless will be an increase in the number of direct commissions : and is it quite certain, if educated youths of good family were available among the fighting classes, that this increase would be to the disadvantage of the service ?

(b) "*The loss of locally trained men to their regiments.*"—Every regiment would obtain its Native Officers under the same system. They would be striving, one and all, to do their best for themselves as well as for the service in general.

The well-being of the regiment itself would ensure that the man's training during the time he served as non-commissioned officer would be the best that his officers could give him. While it would be unjust to suppose for a moment that any Commanding Officer, when selecting a man for a commission, would recommend any but the best he could.

But, apart from this, is not the whole argument a case of losing sight of the real object, the good of the service at large, in the minor consideration, the good of the individual regiment ?

(c) "*Loss of esprit de corps.*"—The question of "*esprit de corps*" would appear to be exaggerated : while any loss of this that there might be, from a regimental point of view, would only be temporary. This would be more than compensated for by the creation of a "caste" of Native Officers with the *esprit de corps* of Native Officers as such, and by the more marked dividing line between the ranks which would result.

Many will probably object that they see no necessity for this dividing line at all, while they consider that its creation would do far more harm than good.

If it were possible to keep on indefinitely the present system of selection by which men are to a great extent appointed to commissions on account of their social status, this would doubtless be true to a very great extent.

But this is the very point that is questioned.

through is infinitely better than loose rocks or stones, even when of a goodly size. Finally, the possibility of reverse fire should always be considered and protection given, where not already provided by natural features.

As regards the preparation of a defensive position which it is necessary to hold at all costs for a certain period of time, and in which an *active* defence is intended combined with a real hot counter-attack, the hills afford some advantages combined with certain drawbacks. The construction of a false front is easy, and deception in general much simplified; also, by holding the salients with a cross-fire on the re-entrants you can utilise fewer men and therefore take up a much more extended front, when such is required. Moreover, the existence of many prominent features may assist you to secure one, or possibly both, flanks, and the nature of hill country generally will help you in acquiring cover for supports and reserves. Trenches too can be concealed and so constructed that while the occupants are safe from the effects of the enemy's artillery, they can, by their fire, ably defend the position against an infantry assault. On the other hand, however, the difficulty of reinforcing any special point and of making communications will be much felt, as well as that of bringing off a successful counter-attack. There is also the possibility of "dead ground," and of a good deal of plunging fire. As machine guns must have cover for withdrawal they will generally be placed in re-entrants whence they can sweep the approaches to the salient with a cross fire. The great secret of early and effective action is to tell off your "sections of defence" as soon as you can and appoint a reliable officer to each. Having done this it is sound to have a good look at the position from the enemy's point of view; imagine how you yourself would attack it, and then arrange your defences so as to frustrate his every move.

I hope I shall not be accused of saying too much about saving one's own skin during retirements and in defence, for I would have you remember that in our small wars in the hills it has usually been during a retreat or withdrawal and when camped, that our reverses and severe losses have taken place. I may also add that in my remarks on the above subjects I have emphasised the necessity of being in all cases aggressive and never patiently enduring. Napoleon says "In mountain warfare the assailant has always the disadvantage." We have seldom had the opportunity of testing this maxim when opposed—as was generally the case—by an enemy who always retired when his flank was threatened and never stood to take any punishment. But I think we should fix our minds on the fact that we may be engaged against an European enemy in hilly country, who will be prepared to take and give any amount of punishment and against whom it may be necessary to suffer the very heaviest losses before we have gained our objective. As I am remarking in

some notes on "Manœuvres" later on, (heading XV, para. 16) it is necessary to try and manœuvre the enemy out of any commanding heights near his position, and circumstances may demand that in some cases this takes place before the attack, and in others *during* the attack, that is, combined with it. Again, in the same notes I have mentioned the danger of a disconnected attack; and in retirements I have said that all ravines and nullahs unknown to you should be avoided like poison, but these are safe enough in the attack, *if*—and this is absolutely essential—the commanding ground is held, and will be of the greatest use as cover for troops. Let us suppose that you have made your final dispositions for attack, that the enemy's fire has been sufficiently subdued to allow the infantry to advance and that you are attacking him in position on commanding ground. I think I might say it will invariably pay best to combine a *holding* attack with a turning movement or else a flank attack; * that is to say, you hold the enemy with a *secondary* attack while you direct your *main* attack against the point you have fixed on; but, on occasion, it may be necessary to make a frontal attack assisted by a feint elsewhere. Whatever course is decided on, further action must be guided by certain leading principles which have been mostly brought to notice during training and which are briefly as follows:—

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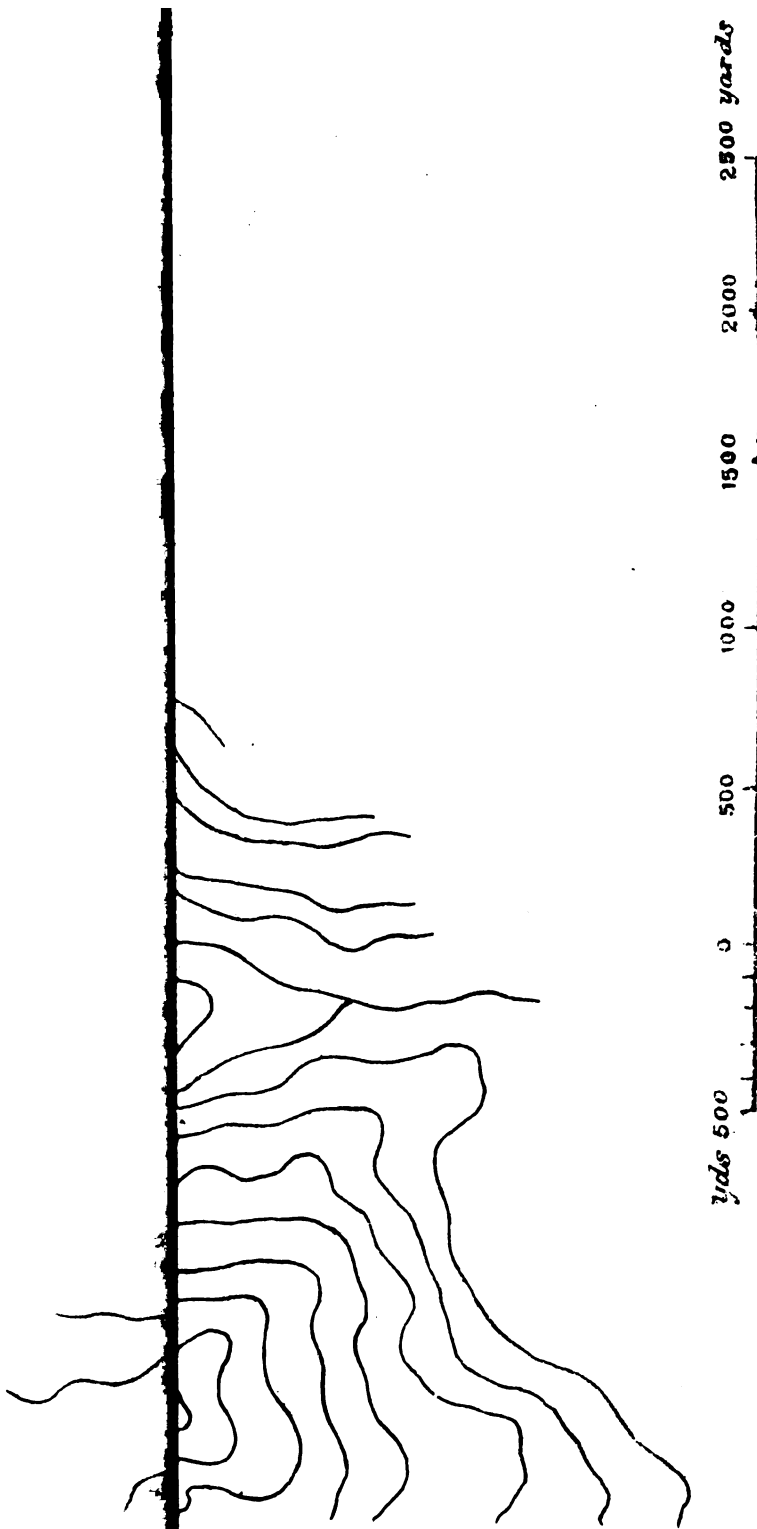
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should be valuable for a sudden surprise over a comparatively short distance. It may be worth while to describe it briefly.

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When camped at "A", you wish to occupy the SITOLI ridge at night unknown to the enemy who nightly patrols the main road to "A." Enemy is bivouacking about two miles west of SITOLI and knows you are at "A." Taking signallers you reconnoitre SITOLI and find two impassable ravines between your camp at "A" and the position at the South end of SITOLI hill (an old Gurkha fort) which you wish to occupy. But a temple X is visible from A and would do admirably for your objective. The country is bare and unwooded. You helio from X to A to fix up two long poles about 200 yards apart, aligned on X. You then withdraw to a point Y, and from there also align two bamboos on X. On arriving in Camp A you align two poles in a similar way on to Y. That is, there are three alignments as shown. Before marching at, say, midnight, you fix two lanterns at A on the poles aligned on X and two more on those aligned on Y. Keeping these two last *covered*, a selected officer leads the way to Y; after arriving there you fix two more lanterns on the bamboos you aligned on X and continue your march in the same way until the intersection of the lights AX and YX give you your objective. The officer who leads has a bulls-eye lantern in a kerosine oil box open towards the column, and carried, slung on a pole, by two men. With only one man carrying it, the light might swing round and be seen by enemy's patrols. In a flat country, especially on a large sandy plain, this method of marching could be carried out by means of two sets of large lanterns a mile or so apart aligned by bearings, the intersection of which would give the point it was desired to reach. I saw this successfully worked at Pur Camp some years ago, and was much impressed by it.

So far as my personal knowledge goes little opportunity is taken of exercising several units together in the hills when located in the same neighbourhood, or even in the same station. The question of expense may occur in the former case, but the practical test of strong contingents from two or three regiments maintaining themselves for a very few days at a time while manœuvring under a general idea would be interesting. Given the right time of year, a suitable cooking utensil and a good blanket, the outing ought not only to be inexpensive but instructive and enjoyable. In fact it is impossible to over-rate the advantages of such outing to all ranks. A single trial will demonstrate, how much is learnt and how the instruction gained is of real practical value. Such tours are occasionally undertaken by companies, or double-companies, and even battalions, but the point I want to emphasise is, that they are very seldom attempted by a larger unit, and in two, three or four battalion stations in the hills I daresay the number of times in a year the whole garrison manœuvres together, with a night out, could be counted on

the fingers of one hand. It seems to be considered by many that the battalion is the largest unit it is necessary to train. In short, we do not seem to look beyond this, and if directions regarding training apply entirely to that unit perhaps much valuable teaching is missed. I wish it could be deemed feasible to take advantage of the months of April and May annually—or even biennially—when the weather is so suitable in the hills, to carry out combined training with, possibly, all three arms, and in the construction of siege works, entrenched camps, etc., etc. It is true that in certain localities four or five battalions are given a week or ten days manœuvring once a year, but this is hardly enough, as is often apparent at such concentrations, and the following notes regarding points brought to notice thereat may be useful. Few of them present anything new and are only referred to because so frequently lost sight of.

1. The manœuvre area having been selected, it is usual to fix definitely the centres of supply which frequently give the whole show away, to the chagrin of the respective commanders. These officers might be allowed to meet prior to the manœuvres, and with the assistance of a Supply and Transport Officer, be permitted to fix their own supply depôts.

2. It is impossible to over-rate the importance of a personal reconnaissance by O. C. Force; not only before an attack is launched especially in broken and wooded country, but again, later on, as the attack progresses. With an enterprising opponent too a reconnaissance should always be made by the Commander every evening, that he may see with his own eyes the lie of the country, anticipate any forward movement of the enemy and keep his scouts up to the mark.

3. Avoid separating the units of a force without the most positive information, and until—as a general rule—in actual contact with the enemy. But if necessary to detach a portion let it be completely self-contained and independent, for the time it is out.

4. In defence avoid taking up too extended a position for the force available, and economise your men by keeping a few to watch with the remainder centrally situated. If you concentrate your force in or near a suitable position, and watch every side you are then able to finally dispose your troops according to the enemy's preparations for attack, as they disclose themselves.

5. In the same way a disconnected attack is dangerous and it is often preferable to keep the whole force together, covered with scouts until your final dispositions are made.

6. If the enemy is strongly posted and evidently intends to remain there, always try to manœuvre him out of any commanding heights near his position, possibly by night operations; but if he is one of the kind who retires directly a flank is threatened you will by such manœuvres lose all chance of inflicting severe punishment. Cling to the ridges and if a choice is offered always attack *down* hill in preference to *up*.

7. Obtain touch with the enemy as soon as possible, by means of the reconnoitring scouts I have referred to, and never lose it.

Scouts should always be warned to give information to the nearest unit of their own side.

8. Although troops moving in advance should keep as much as possible to the main ridges, let them avoid the *crest line itself* on every occasion; and this not only requires care as regards moving along or over it but as regards *firing from it*. Leave the crest line alone, for generally speaking, and especially if the hills are wooded, the enemy's side is the better one to shoot from.

9. When absolutely obliged to cross a ridge or saddle under the enemy's fire, heavy loss will be less likely to occur if the men are taken over at a rush in widely extended order, than if let loose one by one on the same path.

10. In framing orders, as a Staff Officer, never forget to allow officers commanding units time to give their men some food and rest before an attack or after an early advance or retirement.

11. Ask O. C. Units to always arrange, if possible, for their men to have one, or one and a half, days' rations with them in addition to cooked food for the current day, as well as some kind of over-wear. It is useless the troops only taking out the cooked food for that day. This is generally eaten early and should they remain out for the night, there is nothing left! The aluminium utensil, referred to under "Dress," is primarily intended for cooking with.

12. The section ammunition reserve should invariably be kept close to the unit.

13. In the hills many Umpires, and those active ones, are required. Some might be permanent and others consist of "casualties" detailed as opportunity offers or day by day. The permanent ones are perhaps better camped alone in some central position, with one detached to each force with which he will remain until relieved. Casualties should be much more freely made including C. Os. of battalions and sometimes the G. O. C.

14. When during an advance the country changes from bare to wooded, supporting bodies must be brought up much closer.

15. And lastly conceal all movements as much as possible and try to deceive the enemy in every way.

In these notes I know I have omitted much, and at the same time referred to a great deal of petty detail which is very old. I console myself with the oft-repeated quotation, "There is nothing *new* in the world but what has been forgotten."

THE APPOINTMENT OF NATIVE OFFICERS IN THE INDIAN ARMY.

BY CAPTAIN A. L. BARRETT, I.A.

Before commencing this article the writer must crave the indulgence of the many officers of far more experience than himself who may read it.

Even if they are unable to agree with his arguments, he hopes they will consider the opportunity offered for discussion sufficient excuse for his bringing them forward.

It is submitted that the Indian Army is at the present moment approaching a time when considerable changes will have to be made in the present system of appointment of its Native Officers: and above all in the case of regiments recruited from frontier tribes.

The men in these regiments are to a great extent illiterate or, at any rate, they have received whatever education they are possessed of since entering the service and through the medium of the regimental schools.

The requirements of modern war, and the great width of front which armies now occupy, in comparison to what they formerly did, tend to throw more and more responsibility on the Native Officers, and call for increased initiative, self-reliance, and skill on their part.

They may often find themselves far removed from any possibility of consulting with their British Officers, and the decisions they then arrive at may seriously affect the whole course of the operations.

It becomes, therefore, continually more and more necessary that they should be thoroughly well grounded in the science of their profession.

By this it is not meant that Native Officers should become educated Babus, able to read and write English, or crammed with a lot of unnecessary book-learning. This would only lead to a class of men in the commissioned ranks very different to that requisite for the good of the service.

But it is claimed that every Native Officer should be able to read and write fluently in Urdu, and that, through the medium of that language, he should study his profession.

Moreover, it would seem only right that so as to be thoroughly competent to watch over the interests of his men, he should be capable of understanding his company accounts, and not be at the mercy of his Pay-Havaldar.

It may be argued that these accounts are all subject to the supervision of the Double Company Commander. Very true: but it can be taken for granted that many little things happen in a company which never come to the ears of the Double Company Commander: these are just settled, without reference, by the Native Officer to the best of his abilities.

Again, many officers of the Indian Army will perhaps agree that one of the weak points in the discipline of that Army is the want of a well marked line of social distinction between the Native Officers and the men in the ranks.

The present practice is to promote men to commissions in the same regiment in which they have performed all their rank service. It follows that many, as a matter of fact that most of them, have intimate friends and relations serving as privates and non-commissioned officers in their own company, and it is with these that the Native Officer, for the most part, associates after promotion.

This state of affairs leads to an utter absence of "caste" sentiment among Native Officers as such, and to a great deal more *bhaibandi* and patronage than is for the good of the regiment or the service.

Another apparent weakness of the present system is the idea that gradually creeps into the heads of the men that promotion goes by seniority; for it is of course quite hopeless to expect them to understand that a man, who makes an excellent non-commissioned officer, may be utterly incapable of carrying out the duties of a Native Officer.

The result is that, where the Commanding Officer is sufficiently hard-hearted ruthlessly to pass over an unsuitable man, a feeling of injustice and dissatisfaction remains, not only with the man himself, but also with all his comrades.

Sometimes, however, it may happen that the Commanding Officer is unwilling to supersede a man who has done many years of excellent service. He may therefore promote him in spite of the fact that he is not absolutely the best man available, and in the hope that, as soon as it falls due, he will take his Native Officer's pension. This is often very far from the idea of the man himself, and it then becomes a very difficult matter to get rid of him.

Whether the resultant inefficiency of certain Native Officers is worse, the dissatisfaction caused by supersession is an open question.

It is hoped that most officers who may read this article will agree that there is at any rate a certain amount of truth in the statements made above.

It remains then to find out whether there is any way by which these weaknesses can be remedied.

A year or so ago, it is believed, a scheme was mooted with reference to the starting of a college in India, somewhat on the lines of Sandhurst, for the training of Native Officers. What the fate of this scheme was is unknown to the writer, but it was rumoured at the time that the general trend of opinion was adverse to it. It is said, moreover, that the chief reasons of many who disapproved of the scheme were—

- (a) that too many direct commissions might be granted;
- (b) that Regimental Officers, who had been responsible for all the man's training since his enlistment, would lose

his services, and the result of their own care and trouble just as he was becoming most useful ;

(c) that the Native Officers would not have the same *esprit de corps* as under the present system ;
and

(d) that they would not have the same intimate and personal knowledge of their men.

Let us examine these objections in turn.

With reference to—

(a) "*The question of direct commissions.*"—Past experience certainly shows us that the granting of direct commissions has been in many cases unsuccessful. But what reason is there to suppose that they would be given through the college in any greater numbers than at present ? Or at any rate until the classes from which the Indian Army is recruited receive considerably more education in their youth, that is to say, prior to their joining the service ?

When this does happen there doubtless will be an increase in the number of direct commissions : and is it quite certain, if educated youths of good family were available among the fighting classes, that this increase would be to the disadvantage of the service ?

(b) "*The loss of locally trained men to their regiments.*"—Every regiment would obtain its Native Officers under the same system. They would be striving, one and all, to do their best for themselves as well as for the service in general.

The well-being of the regiment itself would ensure that the man's training during the time he served as non-commissioned officer would be the best that his officers could give him. While it would be unjust to suppose for a moment that any Commanding Officer, when selecting a man for a commission, would recommend any but the best he could.

But, apart from this, is not the whole argument a case of losing sight of the real object, the good of the service at large, in the minor consideration, the good of the individual regiment ?

(c) "*Loss of esprit de corps.*"—The question of "*esprit de corps*" would appear to be exaggerated ; while any loss of this that there might be, from a regimental point of view, would only be temporary. This would be more than compensated for by the creation of a "caste" of Native Officers with the *esprit de corps* of Native Officers as such, and by the more marked dividing line between the ranks which would result.

Many will probably object that they see no necessity for this dividing line at all, while they consider that its creation would do far more harm than good.

If it were possible to keep on indefinitely the present system of selection by which men are to a great extent appointed to commissions on account of their social status, this would doubtless be true to a very great extent.

But this is the very point that is questioned.

Owing to the requirements of modern war it becomes daily more and more necessary to select for promotion the most intelligent men available, and the old clan leadership is already becoming less and less common.

Thus it is by no means certain that the man who is selected as most fit for a commission is one who, owing to his social position, is able to mix freely with all his subordinates without any loss of power or prestige.

(d)—The final objection, namely, that the Native Officers would not have the same intimate knowledge of their men, is irrefutable.

It should not, however, take them long to find out all that is necessary about them, especially as they would be men of the same *jat* as themselves: whereas the absence of *intimacy* as already suggested might be advantageous rather than otherwise.

The proposition put forward for consideration amounts then to this:—

That every non-commissioned officer selected for promotion to the commissioned ranks, and every candidate for a direct commission, should be sent to a college for a period of not less than one year. He would there be instructed, when necessary, through the medium of Urdu, in elementary topography, map-reading, tactics, fortification and law, and also in the method of keeping company accounts, etc. Any attempts to force on the study of English should be deprecated. When one takes into consideration the want of education from which these men suffer when first they enter the service, it becomes evident that they have quite sufficient to struggle against without having to learn a *second* foreign language: for it must be remembered that to a large proportion of them Urdu itself is a foreign language, though one which they soon pick up during the ordinary course of their regimental service.

It is further suggested that, on the completion of their course, those who successfully pass the required tests should be immediately granted a commission, and either put on half pay or kept on at a slightly higher rate as assistant instructors, pending the occurrence of a vacancy. This course should lead to no extra expense to the State. The "half pay" of a Jemadar is less than the pay of a Havaldar; yet it is most improbable that, with the grant of a commission and the near prospect of full pay, the candidate would find any reason to grumble. During his absence at the college the vacancies in the regiment could be filled by "acting" appointments without pay; the same prospect of near promotion would prevent this being considered a grievance.

One advantage of these acting appointments would be that they would furnish an opportunity for the non-commissioned officer next for promotion to be practically tested as to his fitness therefor.

On the necessary vacancies arising the successful candidates would be posted as Native Officers in companies of their own class, but in different regiments to those in which they originally served.

Some of the advantages of this latter course have already been discussed. It would have the following also in its favour, namely, that the feeling of hardship in the case of many a worthy old non-commissioned officer who had been passed over would be mitigated. For he would not so much mind a junior being selected to attend a college course away from the regiment, while he would never suffer the mortification of having a junior who had served under him promoted into direct authority over him.

An attempt has been made above to show some of the advantages that might be derived from some such college: there still remains the further one of the time that would be placed at the disposal of the candidate for the purpose of study; during this they would be free from all the petty detail of regimental routine, and have the leisure to really devote themselves to working up the science of their profession.

The financial aspect of the proposal has been lightly touched on above in as far as concerns the assistant instructors. If the proposal to place those candidates not thus utilised on half pay were not approved of, they might be temporarily attached as extra Native Officers to regiments. In this case they would have to be paid more than half pay, though not necessarily at full rates, and this would mean a slight increase in the Pay Vote.

The number of British Officers necessary as instructors at the college would, of course, depend on the number of students. Classes of ten, however, would appear to be the maximum that any officer could look after with the aid of an assistant instructor. As they would have to be first class men, with good linguistic abilities, their pay would have to be high enough to attract them: the knowledge, however, that successful work on their part would lead to further professional reward and recognition would doubtless reduce the amount necessary for this purpose.

It is impossible to go further into detail on this subject in a short article like this, because the expenditure necessary would depend on so many considerations. For instance, presumably at first the college would start on a small basis; not attempting to train all the Native Officers necessary to keep the different regiments up to strength until its success or otherwise had been clearly demonstrated. It would probably be supplemented by the present system.

During this probationary period also some existing buildings could doubtless be found for the accommodation of the pupils.

The initial cost therefore of the experiment should not be prohibitive. The next question that arises is the system of the selection of candidates.

This is without doubt a difficult one.

To ensure no dissatisfaction on the part of the Native ranks, it is necessary that candidates should be chosen fairly equally from regiments of the same constitution. A regular competitive examination would be hard to arrange for. It would necessitate the formation of an Examining Committee: to ensure that the test was

in all cases equal, the same Committee would have to carry out all the examinations.

But the greatest of all objections to it would be that it would lead to men being selected for book knowledge rather than for professional ability: this would be contrary to the whole "*raison d'être*" of the college.

Apart from this it might lead to certain regiments happening for a time to gain very few places on the list, and to a consequent outcry on the part of the men. And even if better men were sometimes thus obtained, at such a price they would be very dearly bought.

During the experimental stage the difficulty would not be so great, as the number of vacancies would depend entirely on the size of the college. When this was passed, however, the size of the college should be always adequate for the probable number of students.

To arrive at the number of vacancies likely to occur, so as always to have men ready to take them up, and yet, as far as possible, to avoid the expense of having surplus men, will always be difficult.

It should be borne in mind, however, that, in a case of this sort, too many is far better than too few.

An average might be taken from previous years showing the number of vacancies likely to occur in each particular *jat* or class of man. These could be distributed in strict turn among regiments having those classes. The candidate could then be nominated by his Commanding Officer, who would certify that his educational and professional knowledge was such as to justify the expectation that he would show himself worthy of the choice. If no such man were available in one regiment the vacancy would pass on to the next in turn, the original regiment still retaining its position as first on the list.

A possible objection to this is that Commanding Officers, rather than confess that they had no qualified man, might be tempted to recommend one not really competent. This possibility would be reduced to a minimum if it were understood that such a confession on the part of a regiment would never be held to its discredit. Officers can always be trusted to do their best with what material they have.

An alternative scheme to the above would be the granting of vacancies by divisions—so many to each division. The Divisional Commander could then select from among nominations made by Commanding Officers. This proposal, however, presents many difficulties: especially considering the way in which classes are now mixed up in commands, owing to the posting of regiments to all parts of India.

If, however, this article obtains any favourable attention many officers will doubtless come forward with workable plans for successfully overcoming all these difficulties.

The writer has intended only to bring the subject forward generally in the hope that it may lead to discussion.

One of the problems of the present day is that of providing a reserve of British Officers to counteract the enormous wastage that is certain to take place in any large war. This question is all the more pressing owing to the great difference at present between the professional knowledge of British and Native Officers.

It is not in any way suggested that attempts to try and supply this want should be in the least relaxed: but cannot measures be taken to try and help the solution of the problem from the other end, *viz.*, by educating the Native Officer up to a higher standard of proficiency?

The material is excellent: it only remains to make the best of it. Are we doing so?

CAVALRY TRAINING IN THE HOT WEATHER.

By MAJOR E. M. J. MOLYNEUX, D.S.O.

[This article gives the gist of a Hot Weather Lecture to Subaltern Officers.]

In the cold weather we are apt to hear reiterated, and with some reason, the complaint that, with Camps of Exercise, Staff Rides, etc., it is hard to get through the formidable amount of work laid down for the season. In the hot weather it is rightly considered inadvisable, in such a station for example as Multan, to work either men or horses hard during the hottest months. The object of this lecture is to point out how we can very materially lighten the cold season's work, and at the same time not call upon horses or men for greater exertion than is good for them in the heat, by putting them in summer through exercises which develop the intelligence of the men and the steadiness of the horses, leaving the cold season more free for exercises for which hard condition is essential.

Some very important matters which concern Cavalry efficiency have little laid down about them in text-books. From the books we can learn everything theoretical that can be advanced about the manœuvres in close formation and the shock tactics of our arm: the development of this side of Cavalry efficiency having been continued for hundreds of years. Without the necessity for training on the above lines having diminished to the slightest extent of recent years, we are compelled, in order to attain the many-sided efficiency necessary to fit Cavalry for all conditions of modern war, to undertake, in addition, to train them in directions formerly unthought of.

In the most recent text-books both of Cavalry and Infantry, great stress is very properly laid upon teaching Non-Commissioned Officers and men to "use their own judgment." But there is not really very much suggestion conveyed in these works as to the concrete meaning of "using their own judgment." And yet, under certain not infrequent conditions of modern war, the fact of their having been so trained becomes all important. Nothing, to my mind, is more trying to the officer in command of a squadron scattered in fire action for the first time in war than the feeling of his own complete personal helplessness to influence events; that all the control has passed out of his own hands for the moment, and that all now depends upon the training of his men—a training the deficiencies in which he then realises fully for the first time.

It is then that the conscientious and painstaking squadron commander will find himself richly repaid, and the "idle apprentice" suffer, as surely as in the story of Dick Whittington. It is only the man, who has not seen war or does not understand human nature, that can lay the flattering unction to his soul that "they will do it all right when the bullets begin to fly about." Will they? Their commander may himself, when in action for the first time

under a hot fire, know what to do and what his men should each do. But he may very possibly find that he, like the rest, is chained to one spot; to move up and down the line may mean certain death for no advantage. And he will find that the mental paralysis which comes upon many men when under the strain of intense excitement—as will be caused by their first serious action, which, for reasons of ground, etc., may quite possibly be a dismounted one—prevents their minds from acting at all except along familiar lines. I remember the conduct of a couple of raw recruits on one occasion when a patrol in Natal was retiring under fire. We had been across the Tugela into the enemy's lines, and some men had been dismounted to open fire and so check pursuit. We had got some distance back towards the river, when, to my horror, I saw two of the men who had dismounted were far behind. They were running towards us on foot, holding their horses between themselves and the bullets, now spattering all round them, for protection. Not until an officer rode up to them, and, gripping their bridles, forced them to mount, did they get into the saddle. They were not demoralised by terror: only, as they explained, their minds became too much of a blank to think out an unfamiliar situation. Doubtless your men would eventually learn—in the best of all schools—actual war experience. But it might easily happen that the education would prove too expensive: that the first action would be an important one, upon which your reputation and the lives of your men might depend: and you might not get a second chance. If you doubt the necessity of teaching them what is sufficiently obvious to your own more highly trained intelligence, only think of the silly things you have seen them do in the piping times of peace, without any factors to unsteady them. Quite a short time ago I happened to come on to the parade ground, on which, at irregular intervals, are scattered little dark-coloured bushes, a foot or eighteen inches high. The men were going through an "attack practice"—supposed to be turning an enemy out of some place where he could not be reached by shock action. Every man who could do so made for a tiny bush, and flung himself down behind it. Those who had no bush to get behind, with their khaki figures when lying down merged into the rough khaki ground, were almost indistinguishable at a few hundred yards: whereas the little dark bushes showed up clearly against the background. But the Native Officer in command was quite satisfied that he was teaching them something of value, until I stopped the performance and showed him how hard it was, from a few hundred yards in front, to find the prone khaki figures at the end of the rifle, and how the man behind the bush was in the position of a man lying behind a bull's-eye. The intelligent selection of cover is a point for which you should always be on the watch: cover from view, though often exceedingly valuable even if unaccompanied by cover from fire, is utterly useless if your enemy knows to a nicety where his bullet will find you. Similarly you should get your men to understand roughly what is and what is not adequate cover from fire. Unless checked, you will find them

frequently crowding in fancied security behind some low mud wall not more than 6 or 9 inches thick. Such a wall, at medium ranges, will give them no more protection than if it were made of cheese.

Many exercises involving the practical combination of musketry principles with a tactical idea can be well carried out in the hot weather. In an operation such as the turning out of a hostile patrol or other small body from a well or farm-house in which he is checking the advance—a very frequent proceeding on service, which cannot be always avoided by riding round his flanks—all ranks should have practice in putting into execution what they are all taught in theory:—that when any unit rises to make a forward rush, other units still lying under cover should support the advance by pouring in, without waiting for orders, the most rapid and concentrated fire upon the objective: fire at other times being slow and deliberate. They should all know the object of this: that as the enemy rises to fire on advancing troops, the sudden storm of bullets will make him involuntarily duck, or in any case unsteady his aim sufficiently to make his fire harmless. Make the men give you the reason for what they do: it is not enough for them to know that “it is the order.” If you will fall out all Officers and Non-Commissioned Officers when doing practices such as the above, you will probably be disappointed at first to find how slow and unhandy the men are at watching for a forward move from another portion of the advancing line, and at commencing a rapid fire on their own initiative. Closely allied to the above is the necessity for constantly instilling into them, by practice, the advantage of always bringing a converging or flanking fire to bear on any place from which it is desirable to eject hostile bodies. There is no army in the world in which so obvious and elementary a principle is not among the very first inculcated by precept. We have only to read the accounts of the Manchurian Campaign to see that on the Russian side it was in practice consistently omitted. The hunter's instinct of the Boer, on the other hand, made it obvious to him without any teaching. We have to foster that instinct, for use in the numberless petty encounters when the hostile scouts meet along a front of vast extent. The practice of ambushes, again, does not necessarily call for physical exertion. A useful practice is for the squadron commander, with a pair of good field-glasses, to ride forward along a road on either side of which cover and broken ground exist, leaving orders with a Native Officer or Non-Commissioned Officer to ambush him on his return. On his return he should dismount, and, field glasses in hand, examine everything in the nature of cover on either side of the road for the slightest trace of the ambush as he slowly approaches. Given keen sight and good glasses, his men will very soon find that not only none of the ambuscading party can show themselves, but not even the look-out men can observe otherwise than through a bush or tuft of grass or from under dense shadow. At first all kinds of errors will be observed: the ground will be ill-chosen, the men will fire into one another from across the road, the outbreak of fire will not be

simultaneous or proper arrangements made for communication, fire control, or resistance to counter-attack. All through the hot weather the native officers are changing, some going on leave, others taking their places: this gives opportunity for giving all a turn at working out and conducting exercises of this kind. The execution of all dismounted work is now far better than it used to be. Ten or twelve years ago, a squadron of Cavalry taking up a line for fire action worked clumsily and without much intelligence. Suppose that a canal embankment had to be lined, with a view to covering a retirement, pressed by the hostile Infantry, whom it was essential to delay. Great shouting and confusion first; then when the space to be defended had been divided amongst the four field troops, each troop would proceed to the centre of its position; the men would be dismounted there and "told off"; then they would proceed to divide up the frontage equally amongst them, without the slightest reference to cover available, so long as they were equidistant; and, quite as likely as not, they would reach their places by marching or running in file along the top of the embankment in full view of the enemy. The above exercise is worth practising intelligently, as it might have to be done in face of the enemy at any time. The quickest way—always provided the men are thoroughly trained and in hand—of doing this is to point out the extreme flanks of the line which your squadron [or, if one squadron be acting alone, such portion of it as you may wish to employ dismounted] is to occupy, and simply direct the men to scatter by fours and dash on to it at a gallop. On the way up to the position the No. 3 marks down the place where the led horses of the four men will be best placed: as the position is reached, each section of four men closes in on the horse holder (No. 3), and, dismounting, get under the best available cover without, if possible, showing themselves to the enemy, and without any regard for their intervals; cover and field of fire being the essential factors in determining their position. With the range and accuracy of modern rifles it is quite immaterial if the men are distributed, say, one to every 20 yards of front. Even supposing a gap of several hundred yards exists between one party and the next, the position is not necessarily any the worse occupied on that account. Supposing that on either side of such a "gap" good cover exists: it is surely far better to get all your men under cover from which by their cross fire they can prevent the "gap" being approached, than to dot them along the "gap" where their fire will be made less reliable through the exposure of the men. Yet, without practice, we cannot count on our subordinates noting so obvious a point. Cavalry, fighting a delaying action, are not bound by Infantry rules on this subject: for they would naturally not be required to await a bayonet charge when dismounted. The formation alluded to above was found in South Africa extremely useful when a front had to be rapidly taken up by a comparatively weak body of mounted troops along a broad position. The position will be far more rapidly occupied and (the men being much nearer their horses) will be more rapidly

evacuated when required, and with less confusion, if the men, advancing in very open order to seize it, simply close on to all the No. 3's, instead of on to the centre of a troop or squadron, which may be some considerable distance from the flank files. As an alternative to the above, when every man is required in the firing line, the position can be occupied by the men closing into pairs and coupling their horses [Cavalry Training, section 33 (3)]. This should also be practised. To judge of how this is carried out, the squadron may be halted 1,000 yards in rear of the position, whilst the squadron leader and his trumpeter ride to where the enemy are supposed to be, say, 700 or 800 yards the other side of it. On the "advance" sounding, the squadron rapidly occupies the position, the squadron leader timing them until the blank cartridge fire commences, and he at the same time keeps a sharp look out through his glasses for any unnecessary exposure to him when getting into their places. Then he rides along the position, with the men still in it, to see that the best use has been made of cover.

In all such exercises it is better, as a matter of practice, that the squadron commander should not himself order out any combat patrols or look-out men to the flanks. It is a safeguard to the squadron commander—who might very possibly omit to give any such directions with many other cares upon him in the hurry of action—if the troop officers on the flanks are trained to do this automatically. Such look-out men should not ride up with their troops, and then shoot off from the flanks, thereby enabling the enemy to form a very good guess as to the place where the flanks rest, but should be previously detached to reach their places independently. They should also retire direct to the rear, not upon the troops which furnished them, thereby keeping up the enemy's uncertainty as to the breadth of front occupied.

Arrangements should be invariably made by troop officers to acquaint them, by flag signal or otherwise, of the evacuation of the position.

Another item, for which adequate time is hard to find in the drill season, is the training of scouts. As there is no inducement, in our service, for any man to become a scout, it will possibly be found necessary to make it a rule in the squadron that no man will be considered for promotion who has not fulfilled the duties of a scout satisfactorily. As promotions will constantly lessen their number, a dozen men must be under training at once, either as scouts or as under-studies. A good exercise is to start them in two parties 4 or 5 miles apart and let them work towards one another, but necessarily without either party being aware of when the other started, so as to keep them on the alert from the very start. Whichever side sees the other first wins. The squadron commander must be very careful not to betray either side by his presence if he rides about to watch. Apart from disguises, any ruse should be allowed—such as getting up a tree and allowing the other side to pass, etc. In course of time, with patience and good temper you

will find them surprisingly fertile and ingenious in expedients. I remember on one occasion two parties, engaged on the above exercise, both arriving simultaneously at the edge of a belt of absolutely open ground. Neither knew for certain that the other party was on the opposite edge, but strongly suspected that they were there. The situation looked like "stale mate." But from the party, with which I was lying concealed, an irrigation channel, a couple of feet deep and overgrown with bushes, ran half way across the belt, and then lost itself in the fields. As we watched for any sign of the opposite side, a couple of buffalo calves came out from a well at the far side and wandered across together towards the end of the irrigation channel mentioned above. On arriving there, they separated and commenced to browse. A scout from our side now began to crawl down the same channel: when half way down he was fired at by a hostile scout under a bush within half a dozen yards of him—which ended the exercise. I rode up, and asked him how he had got there unseen. He had seized on the two buffalo calves, and, stooping between them with a tail in either hand, had guided them to cover; then letting go their tails, he dropped flat into the channel unseen: once there he could again crawl forward. The simple expedient that had occurred to his bucolic mind might never have suggested itself to an educated man.

All horses should be thoroughly accustomed to passing through a line of men firing blank cartridge at them as hard as they can load. This can be done equally well in the hot weather. Dismount a troop, and extend them standing at about 10 paces intervals, between the remaining troops and the water troughs, as the squadron returns from work. When in extended order the horses are 50 yards away, the line opens fire, and gets in another round (aimed well up in the air) when the horse is quite close. Each rider is nevertheless to pass so close to the man who fired at him that he can touch him with his hand. This to be done at all paces: there is plenty of blank cartridge available, and it cannot be put to a better use. Later, the dismounted men to spring up and fire when the horsemen are close up. If the horses are thirsty and want their drink they will go on unless genuinely frightened; in the latter case they will be marked down for extra practice until they do not mind the fire in the least. In accounts of the charges of French Cavalry in the war of 1870, we find allusions made to the fact that they failed to damage the German Infantry much, because the horses at the last moment shied off and refused to face the fire. We might at any time be called upon to do the same work: we can only be sure of horses doing this properly in war if practised, in peace, to consider fire innocuous.

Similarly, every man armed with a revolver should be required to accustom his horse to hearing a revolver fired from his back: a rifle with blank will do just as well as a revolver for this, if revolver blank cartridge is insufficient. In broken ground the revolver might quite possibly be the only way to bring down one's man.

I dwell upon the advisability of this form of training not with a view to minimise the importance of the mounted action of our arm : on the contrary, our mounted training is that for which we require most of our time and energy in the cold weather, when horses can be worked hard. By getting through as much as we can of our dismounted training in the hot weather, we leave the cold season more free for other work, without the possibility of training in fire action, scouting, etc., being "crowded out" or inadequately dealt with. In the next great war, the action of Cavalry, in the opinion of the great majority of soldiers of experience, will include a very important amount of fire as well as of shock action. But the ablest and most experienced soldier cannot tell us the exact proportion which our action in the one sphere will bear to our action in the other. In any case, given that any Cavalry acquires, by shock or otherwise, so marked a superiority as to drive the opposing Cavalry from the field, then its next procedure must necessarily be to play havoc with lines of communication, etc., where it must meet Infantry. So we must be prepared to apply our training in any direction which circumstances may indicate.

THE MILITARY REQUIREMENTS OF THE BRITISH EMPIRE, AND HOW TO MEET THEM.

BY MAJOR C. H. CLAY, 7TH GURKHAS.

I.—THE MILITARY REQUIREMENTS OF THE EMPIRE.

It will, we think, be readily conceded that in considering this question we must have regard to the British Empire as a whole, and must accept our responsibility for the efficient defence of every part of it. In default, too, of any binding agreement or understanding with our Colonies we must be prepared to undertake the main burden of their defence, and can only trust to them for such a modicum of assistance as the experience of their efforts on our, and their own, behalf in South Africa, has led us to expect. At the same time, however, we consider that the question of Imperial Defence can never be satisfactorily solved by the Mother Country alone, and we look forward in the future to the initiation of a sound military policy in which all parts of the Empire will take their due share, both as regards previous preparation for war, and the part each is to play in it. Before, however, we can expect the Colonies to assent to such an arrangement, we must first of all complete our own military organisation, set them an example of patriotic unselfishness and prove the readiness of the nation, as a whole, to bear the burden of Empire as well as to reap its advantages.

This, however, is a problem for the future. For the present we have to deal with the United Kingdom alone.

Before going any further, it may be as well to admit that any military arrangements that may be proposed must always be understood to be strictly subordinate to the paramount necessity under which we labour of maintaining our Navy at a strength sufficient to meet all possible combinations, for without the command of the sea we can neither protect our Colonies abroad, defend our vast sea-borne trade, nor ensure the food-supply of these Islands. Our Navy must ever be our first consideration, and if one or other of the services must be reduced or cut down, it must be the Army. At the same time, however, it is equally important to remember that even fleets have their limits; that ships cannot defend land frontiers; that the strongest Navy in the world cannot carry the war into the enemy's country and dictate terms in his Capital. Our Navy alone cannot keep India and Canada for us should they be attacked on their land frontiers, nor can it force a Military Power to conclude peace on our terms. The Navy of Japan has swept the Russian Navy from the sea, but what would her position have been had she possessed no Army with which to follow up the blow? Had we been in the place of the Japanese we should have been powerless to save Korea from

the hands of the Russians; powerless to capture Port Arthur; powerless to drive the Russian armies out of Manchuria. It may be urged that we should never find ourselves in a similar position, but who can say that we may never have to defend Holland or Belgium from an invader, let alone the Indian Empire and Canada? We must take the Imperial view, "the Long View," of our responsibilities, and once for all abandon the narrow and parochial idea that all our military authorities have to do is to furnish garrisons for our possessions abroad, and provide for the defence of the United Kingdom. The vicissitudes of war may, it is true, one day or other render the latter task necessary, but, in any case, if we organise an Army capable of carrying out its most likely rôle—offensive action abroad—that same Army will be our best possible weapon for Home Defence should the failure of our Navy ever render a descent on our shores feasible. It is a case of the greater including the less, whereas an Army organised purely for Home Defence would never be so easily adaptable for service abroad.

Hitherto we have been content with one Army to which we have entrusted the protection of our possessions abroad; the conduct of our wars, small and great; and the defence of the United Kingdom; calling on the Militia when extra help was required; and, during our war in South Africa, on our Colonies and Volunteers as well. That system, however, was strained to the breaking point in South Africa, and had our enemies been more numerous or more highly trained, the future of the British Empire might have been seriously compromised. Our military needs are so diverse, our sphere of military action so vast, that, to ensure efficiency, it is incumbent on us to specialise; to recognise that the duties that can best be performed by one body of men serving under certain conditions, can ill be served by another body of men, really maintained for quite a different purpose.

II—WHAT THEN ARE THESE MILITARY NEEDS?

First.—We need an army to provide the garrisons for India and for our over-sea possessions; to undertake small expeditions for which a general mobilisation is unnecessary; and to act as the Advanced Guard of larger expeditions for which mobilisation, either partial or complete, is necessary.

Second.—We require an army to supplement the above force; to undertake serious operations on a large scale; and to provide the means for training to the use of arms the bulk of the male population.

Third.—We should have an army capable of taking the place of either or both of the Armies alluded to above, should they be sent abroad.

These armies might be called the Regular Army, the Militia Army, and the Volunteer Army, as corresponding in some degree to the present composition of our Military forces, but, in order to avoid confusion, we prefer to allude to them as the 1st Army, the 2nd Army, and the 3rd Army.

The First Army.

The strength of this Army would be regulated by the garrisons we had to keep up abroad, and by the strength of the striking force it was decided to maintain in the United Kingdom, or elsewhere. Taking the former at, roughly, 136,000 men, *vide* Army Estimates for 1905-06, and assuming that a force of 50,000 men would be sufficient to furnish drafts and keep up a mobilised Army Corps of, say, 30,000 men, we get a total strength for our First Army of, say, 200,000 men, which, if the 60,000 men in excess of the garrisons were kept in the United Kingdom, would allow of a reasonable portion (one-third) of a man's service being spent at home. Service in this force would have to be strictly voluntary, and it would be recruited from the trained men of the Second Army. Short service would be obviously inappropriate to such an Army, and since it would always have to stand ready to take the field at a moment's notice, the question of building up reserves would not have to be considered, these, as we shall see further on, being provided by the mobilisation of the Second Army. We could, therefore, afford to keep men in this Army for the full length of time during which a man is at his prime as a soldier, and, by adopting long service in its true sense, we could offer every man entering the First Army a permanent career, with the certain prospect of a pension to follow. In this way we should attract a good class of men, and, as the annual requirements of such an Army would not be large, there ought to be no difficulty in securing sufficient recruits on a purely voluntary basis. Every man in this Army would be a fully trained soldier, of an age suitable for service in any part of the world, and the adoption of such a system would save considerable expense in the constant sending of men backwards and forwards to India and the Colonies, and would obviate much of the trouble that is at present experienced in furnishing drafts to the units abroad. It would also do away with the sad spectacle, now so common, of men who have served their country for some of the best years of their life being turned adrift in their prime with no occupation, no prospect of obtaining work, and but a pittance to exist on during the remainder of their service in the Reserve, for every man on leaving the First Army would either get a pension or be employed on the drill and instructional staff of the Second and Third Armies. The length of service with the Colours might be from fifteen to twenty years—men who proved unfit for further service being invalided as necessary. This may seem a long period, but our experience with native troops in India shows that the majority of men remain perfectly efficient for even longer, and the Britisher is certainly in no way inferior to the Native in stamina and lasting power. The health of such an Army would be far better than that of a short service Army, and its training and discipline should render it much superior to any European Army raised by compulsion, while the constant experience it would gain on foreign service, and in small wars, would also be a valuable asset. As to the cost of this Army we are of opinion that it would

prove much cheaper, in the long run, than the Army at present entrusted with similar duties. The pay might be the same, to start with, but we think that it should gradually increase with length of service, provided that a man was fully efficient in all respects, and in this Army we do not contemplate the presence of inefficient. The pension list would, of course, add considerably to the expense, but, on the other hand, the numbers proposed are very much less than those of our present Regular Army, and the huge sums of money now wasted on mere paper soldiers, on the weeds and wastrels enlisted solely to keep up the nominal strength of the Army, would be saved, while we should hope to see a great decrease in the cost of transport, invaliding, wastage due to crime and desertion, and so forth. In any case it might be expected that every man paid for by the country was an efficient, and capable of doing the work for which he was engaged.

It will be seen from the above that the First Army can at once be furnished by our present Regular Army, for all that would be necessary to effect the change would be to introduce long service for all men entering it in future, and to give to all men now serving the option of extending for long service, with a pension to follow, provided they are of good character and physically fit.

Certain units would become superfluous since the First Army would be much smaller than the present Regular Army, and these units would form the nucleus for the Second Army with which we propose to deal presently.

Grave objections will, no doubt, be raised to any such change, by those interested, but, we submit, if we are to carry out the objects aimed at in this Essay, it is absolutely necessary to firmly disregard any personal or sentimental feelings, and to deal with the material to our hand with the sole idea of forming a really efficient military machine, in which the bulk of the able-bodied youths of the country may ply their respective parts, with credit to themselves, and with advantage to their country.

The Second Army.

Having provided, by means of the First Army, for the protection and garrisons of our over-sea possessions, and for the maintenance of a striking force sufficient to deal with any minor wars and disturbances, the next step is to organise a Second Army to supplement the First Army in the event of our being engaged in a really serious war, and to afford a means of giving some modicum of military training to a very considerable portion of our male population.

In the First Army the great desideratum is quality, and this we hope to attain by long service, voluntary enlistments, and by the offer of permanent employment.

In the Second Army we are disposed to think that quantity is even more important than quality, though none the less we would aim at the highest possible standard of efficiency. The object of the Second Army must be, therefore, to train as many men as possible in

order to build up a really large reserve, and, consequently, the shortest period of Colour Service, consistent with a thoroughly sound training, should be adopted, while the term of service in the Reserve should be regulated by a careful estimate of the numbers of men we should require to put into the field in the event of a life-and-death struggle for the existence of the Empire.

The strength of the Second Army would depend on these main factors :—

- (1) The number of recruits available each year.
- (2) The total force deemed necessary to give us a Field Army of the required dimensions.
- (3) The strength of the Third Army ; for, as will appear later on, that will react on the strength of the Second Army.

The most important of these factors is undoubtedly the second one, and as all through this essay it is proposed to consider first of all what we require, and then to see how we can get it, we will deal with it first.

The actual numbers proposed do not, of course, affect the principle, but, for the sake of argument, let us consider the case of a war with Russia for the defence of India.

We should then have available in India the portion of the First Army allotted to that country, and the Native Army. These forces would, certainly, have to be heavily reinforced at the outset of the war, and large drafts would be necessary to keep the Field Army up to strength. Russia, to judge from her efforts in Manchuria, could pour into Afghanistan from 500,000 to 800,000 men, possibly even more. To meet these forces we should require at least 600,000 of whom some 400,000 would have to be sent from the United Kingdom. To supply this force, and maintain it, we should require a Second Army of quite 700,000 men, and we propose, therefore, to assume the Second Army to be that number.

The Second Army, however, would only be sent abroad when mobilised, so we have to calculate what strength would have to be trained annually in order to give the numbers required. Taking the period of training with the Colours as two years, a force of 200,000 men would send to the Reserve annually, 100,000 men, or allowing for casualties, and for men joining the First Army after the expiry of their term of Colour Service in the Second Army, let us say 75,000 men. Eight years' reserve service would, eventually, build up a reserve of 600,000 men, which, added to the 200,000 men with the Colours, would give a total force of 800,000 men, or allowing for casualties during reserve service, say 700,000 men.

In this way we arrive at the strength* required for the Second Army and its chief conditions of service, conditions, however, that can be freely modified as required.

* NOTE.—The strength given is, of course, susceptible of great modification, without in any way vitiating the general principle.

To keep the Second Army up to strength, on the above conditions, 100,000 recruits would be required each year. The recruits at present enlisting voluntarily for the Army and Militia amount on an average to 76,000 per annum. Many of them, however, are not of sufficiently good physique to be really desirable additions to the Army, and, possibly, the Militia recruits would not enlist so freely for an army of this description. As, however, the success of the whole system proposed depends on a sufficient supply of suitable recruits for the Second Army, it is essential that there must be no recruiting problem to hamper the military authorities. The application of the Ballot to this force is, therefore, imperatively demanded. The Ballot for the Militia, though not put in force, has been legally provided for for many years past, consequently we are not proposing any innovation, or anything that can be termed un-English.

It is true that the conditions of service in the Second Army would be more severe than they are in the Militia, but it might be possible to modify them to some extent. For instance, any recruit producing a certificate to the effect that he had been an efficient member of a Boy's Brigade or Cadet Corps might be let off with one year's Colour Service instead of two, or it might even be possible to accept a more stringent Militia course as a substitute for the two years' Colour Service.

The strength of the Second Army having been fixed with due regard to the considerations set forth above, and also the periods of service required to be passed with the Colours and in the Reserve, the next point to be considered is its constitution. This, we think, should be on scientific lines, so as to give the proper proportion of cavalry, artillery, infantry, engineers, and auxiliary services, while its location should be decided on with due regard to the distribution of population, so as to ensure, as far as possible, the majority of men being trained in their own districts. At the same time, however, it would be necessary to pay attention to training facilities, and the proximity of suitable manœuvring grounds.

As this Army would only go abroad in case of war, or national emergency, and as the period of service with the Colours would be short, units should have permanent locations, and would, under ordinary circumstances, not be moved about the country in course of relief.

Units would thus, in time, become identified with the districts in which they were stationed, and this might be expected to create a healthy feeling of emulation between districts, and thus increase the supply of voluntary recruits.

The country might be divided up into areas responsible for the production of so many men, and it should be clearly understood that where the number was deficient, the ballot would be enforced to obtain the balance.

An Army of this sort would be in the nature of an improved Militia, and it would be furnished, in the first instance, by the

amalgamation of that portion of the present Regular Army not required for the First Army, and of the Militia, in which we would include the Yeomanry, as being nearer akin to it than to the Volunteers.

As the recruitment of the Second Army would depend, in the last resort, on the application of the Ballot, it would be unnecessary to offer the same terms of pay as are now given to the Regular Army. The old rates of pay would be amply sufficient, as the men would be much younger, on the average, than they are at present, the ages for service with the Colours being preferably from 18 to 20 years. It would also be unnecessary to give any retaining fee to the Reservists of the Second Army, except when actually called out for training, which should be the case every year for the first three years after joining the Reserve, and every other year for the remainder of their Reserve Service. This training could be carried out with their regiments.

These terms may appear harsh and illiberal, but we hold strongly that every citizen owes a debt of personal service to his country, and that in no other way can the safety of the Empire be ensured.

The officers of this force would, if necessary, also be obtained by Ballot, with the exception of whatever permanent instructional staff it might be decided to keep up, and officers of that staff would be appointed from the First Army, as would the non-commissioned members of it. In selecting officers attention would, of course, be paid to educational attainments and general suitability for the rank. Probably there would be a sufficiency of volunteers for the vacant appointments, as most educated men would prefer to serve as officers than to run the chance of being taken by Ballot to serve in the ranks. Officers would put in the same period of service with the Colours, and in the Reserve, as the men.

That some improved system of obtaining a sufficient supply of officers is becoming very necessary is clearly shown by the existing shortage in the Guards and Cavalry, to say nothing of that in the Militia and Volunteers, and the application of the Ballot to the Second Army would do much to remove the difficulty connected with the supply of officers.

As will be seen when dealing with the Third Army, it is proposed to exempt all efficient members of that force from the Ballot for the Second Army, but should the candidates for the Third Army be so numerous as to leave insufficient recruits for the Second Army, this concession would have to be modified to the extent necessary to fill the ranks of that Army, for it must be clearly understood that the maintenance of the Second Army at its full strength is the foundation-stone of the whole of the military edifice that we are designing.

On the other hand, should there be an insufficient number of candidates for the Third Army, it might be necessary to increase the strength of the Second Army to the point necessary to absorb the

number of young men becoming fit for military service each year, for the object of the system proposed is, not only to furnish the actual number of men required, but to train to the use of arms and create a lien on the services of as large a proportion of the manhood of the nation as possible.

The Third Army.

Taking the strength of the First and Second Armies at the figure we have suggested, it is necessary to consider the situation that would be created in the event of the greater portion of them being employed abroad. In such an eventuality it is obvious that some other force would be required to take over the military duties in the United Kingdom, and possibly to even still further reinforce the Armies abroad. As, however, the absence abroad of the Second Army would presuppose our complete mastery of the sea, it is in the last degree improbable that the Third Army would ever have to meet a serious invasion. Consequently, it would not need to be composed of such highly trained men as the Second Army especially as if sent abroad at all, it would be after a considerable interval which would allow of a higher degree of efficiency being acquired. The duties of this force might, therefore, be allotted to the Volunteers, and the present conditions of service would seem to be fairly applicable. The Third Army should, however, be properly organised as an Army, with its due proportion of horse, guns, sappers, and auxiliary services, so that it could take the field as an independent force. As service in it would ordinarily exempt its members from the application of the Ballot for the Second Army, the terms of service would have to be clearly defined, so that every candidate would bind himself to serve for so many years in the active portion of the force, and so many in the reserve. The Army should be subject to Military Law, whenever embodied or called out for training, and this Law should also apply to all members not present with their units, unless officially granted leave of absence.

The strength of the Third Army might be fixed at 250,000 men, which may be roughly taken as representing the average number of effective Volunteers, and its cost would be much the same as at present, except for the additional expense entailed by the conversion of a certain number of infantry men into cavalry and artillery.

As the training in the Third Army would be far less than in the Second Army, it would be necessary to exact a longer period of service with the Colours in order to secure a fair standard of efficiency, and we would propose, therefore, that every member of the Third Army should serve for five years with the Colours and five in the Reserve.

On this basis, once the system was in working order, 50,000 men, not allowing for casualties, would pass into the Reserve each year, and the same number of recruits would be required. Five years' reserve service would give a total Reserve of 250,000, or allowing for casualties, let us say 150,000.

III.—SUMMARY OF FORCE SUGGESTED.

The forces that would be at our disposal under the scheme detailed above would be:—

		Peace.	War.
<i>First Army</i>	(including European garrisons in India and the Colonies) ...	200,000	200,000
<i>Second Army</i>	... ..	200,000	700,000
<i>Third Army</i>	... ..	250,000	400,000
Total ...		650,000	1,300,000

Behind these forces we should have the pensioners of the First Army, and the men of the Second and Third Armies who had completed their reserve service. All these latter would have had a more or less complete military training and would be available in large numbers for garrison duty at Home. No proposals have been made to organise their services, because the need of them seems so improbable, but all that would be necessary in order to do so would be to extend the period of service in the reserve, so as to give a lien on every man's service up to 40 or 50 years of age.

IV.—COST OF THE SCHEME.

As regards the cost of this scheme, as compared with that of the present system, it is difficult to do more than estimate it roughly.

The First Army—Numbers 200,000 men only, as compared with the present Regular Force of (including India) some 270,000 men and 77,000 Reservists. Its expense, therefore, even taking into consideration the cost of pensions and increased pay for longer service, should be very much less than that of the present Regular Army and Reserve.

The Second Army—Is somewhat larger than the present Militia, the proposed Militia Reserve, and the Yeomanry, and would cost considerably more on account of the longer period of Colour Service.

The Third Army—Would cost about the same as the present Volunteer Force.

On the whole, therefore, we should expect to see a substantial reduction in the Military estimates, in spite of the fact that instead of being able with the greatest difficulty to keep up a field force of some 200,000 men (excluding Colonial Troops) as was the case in South Africa, we should be able to maintain in the field an Army of over 500,000 men, without denuding the United Kingdom of all its armed forces.

V.—METHOD OF SECURING MEN FOR THESE FORCES.

We have dealt at some length with the military requirements of the Empire, and with the best means of satisfying these requirements, because it seemed advisable, first of all to lay down as accurately as possible what armed forces would be sufficient to meet any emergency that would be likely to occur. It now remains to consider how

best to obtain the men for these armed forces so that the able-bodied youths of the country should be made available in the least irksome manner. A scheme for the military training of the male population that had no reference to our military requirements would inevitably result in the collection of a mob of men with muskets. Our present system gives us abundance of men, on paper, but they are not available when and where we want them; they serve under so many different conditions that it is difficult to organise them for joint action; men required for operations abroad are not legally bound to serve there; men whose services might be of the greatest importance at a particular juncture, are not available till the crisis has passed, and everywhere we find muddle and confusion, simply because our military machine, as existing, was never planned for the duties it has to undertake.

It has never been recognised, either, that every citizen owes to his country a debt of personal service, as well as of pecuniary assistance, and for years past a small portion of the population—the Volunteers—has been taking on its own shoulders the duty of the majority. This has staved off conscription or compulsory service up to the present time, but we have at last come to the end of our tether, and if our Empire is to be preserved intact, and the glorious heritage we received from our fathers is to be passed on unimpaired to our children, we must face the fact that what has been won by the sword can only be held by the sword; we must educate the nation to recognise that unless they are prepared to sacrifice some of their leisure, some of their freedom to go where and do what they like, they must be content to see the might of England wane before Powers that are neither so short-sighted, nor so self-indulgent. Personally we do not believe that the British nation has yet sunk so low as this, and we feel convinced that if the matter is put before them fairly and squarely they will gladly accept whatever burdens the Military advisers of the Government declare to be essential, and will freely consent to such measure of coercion, in the shape of the Ballot for the Second Army, as may be necessary to ensure the proper working of the Military machine.

VI.—DUTY OF THE CITIZEN.

That every citizen should be able to handle arms in defence of his country is no new principle. That duty was accepted without question, and regularly practised in the old days, and the effect of the Military training that was undergone, as a matter of course, by the youth of the nation, was clearly shown on many a glorious field, where the prowess of the English bowmen seldom failed to secure the victory for our arms even against great odds.

We have sadly degenerated in some respects, since those days, and our young men instead of learning the use of arms, devote their attention to football and cricket and other sports, harmless in themselves, no doubt, and even valuable to a certain extent, but a

poor substitute, after all, for a training in the finest of all sports, the sport of war.

That this should be the case is not altogether the fault of the present and rising generations, for nothing has been done by those responsible for the education of the young to foster sentiments of patriotism and self-sacrifice, or to inculcate high ideals of national duty. We have been living in a fool's paradise, fancying ourselves secure from all danger of attack, and deeming ease and luxury the most important things to aim at. The war in South Africa showed, however, that our race was not really enervated, and that it only required to be put to the test to prove that it was composed of as good metal as ever, a little dull, perhaps, owing to want of use but still ringing true to the touch of battle.

What is needed now is to see that the rising generation is not allowed to rust in the same way. Boys are the most impressionable of beings; sentiments of patriotism, duty and glory are natural to them; love of soldiering is innate in them, and it only requires a touch of the magician's wand to instil them with a keen desire to become perfect in drill and expert in the use of arms.

Much has already been accomplished in this direction by various organisations, and the results attained are well worthy of attention and emulation. What is wanted, however, is to make the movement a national one; to ensure that every boy of a certain age is taught his drill, how to handle a rifle, and, if possible, how to ride. The machinery for this is ready to our hand. Our educational system ensures that every child must receive a certain training, and attain a certain standard.

The country provides this education free to the vast majority of children, and is, therefore, fully entitled to lay down the scope of the education afforded, and it is surely not asking much, that, in return for the benefits conferred, the pupils should be expected to fit themselves, as far as possible, for the defence of their country by undergoing a Military training as part of their ordinary school curriculum. The extra expense need not be great, while the advantage to the country in the improved health and physique of the children would be enormous, to say nothing of the fact that boys so trained would form the best possible material for future soldiers, and if entering the Army, either voluntarily, or as selected by the Ballot, would become efficient in half the time that it would take to make a finished soldier out of a raw recruit. In the case of such boys, therefore, it would be possible to very materially reduce the period of service with the Colours in the Second Army, and thus render the obligation of serving much less irksome and exacting.

The Military training thus afforded should be accompanied by a moral training having for its purpose the inculcation, into the mind of every boy, of the idea that, on attaining manhood, he must serve his country in some form or other, either as a Volunteer in the Third Army, as a permanent soldier in the First Army, or as a member of the Second Army.

Once the bulk of our citizens recognise the duty they owe their country in this respect, the question of how to secure their services for the defence of all that is dear to them will be a comparatively simple one.

In most other countries compulsory Military service is looked on as a matter of course, as the teachings of history and the common sense of the people show them that in no other way can they hope to preserve their independence. As, moreover, they do not require, as we do, to keep a large force abroad in time of peace, the questions of organisation, that they have to confront, are very much simpler than those we have to deal with.

Even Continental Nations, however, would shrink from the principle that every man was obliged to devote a portion of his life to defence of his country's possessions *abroad*, and certainly no such proposition would ever obtain a hearing in Great Britain. It is one thing to make a man serve for a term of years as a soldier in his own country,—quite another to make of him a compulsory exile.

VII.—COMPOSITION OF THE FIRST ARMY.

The above consideration must be borne strictly in mind when dealing with our First Army, and, consequently, its organisation must be based on the principle of voluntary enlistment. Experience has proved, however, that a certain proportion of the population are wedded to a Military life, and it is to this element that we must look for the provision of the First Army, charged with the duties appertaining to service abroad.

We have placed the strength of that Army at 200,000 men, which could, of course, be modified as required, and have recommended that it should be composed of long service men. The annual wastage of such a force would, in time of peace, be very small, and at a liberal computation from 14,000 to 15,000 recruits annually should be ample to keep it up to strength, and this number ought to be easy to obtain considering the liberal pay and excellent prospects held out to would-be recruits. As the latter would all be obtained from the Second Army, as fully-trained soldiers, no special arrangements would be necessary for their recruitment, and the chances are that the large number of men offering their services for the First Army would enable a very careful selection to be made.

VIII.—COMPOSITION OF THE SECOND ARMY.

But when we come to consider the composition of the Second Army, the question at once arises as to how the men for it are to be obtained. Our experience for a long period of years teaches us that there is a strict limit to the number of men who will voluntarily enlist, whether for long or short services in the Regular Army, or in the Militia and Yeomanry, and this limit is considerably below that necessary to produce the number of men required, even under the

present system. It is true that the system we advocate would not necessitate a larger number of men being kept under arms than is the case at present, but it would require a larger number of recruits annually, and recruits of a better quality, for no man would be accepted unless he was physically fit in every respect. The reason for this is, of course, that the Second Army is the great training-ground for the youth of the nation, the machine for building up large reserves, and requires a larger supply of raw material than a force of the same size which keeps its men for from three to seven or more years. To feed this Army, consequently, we cannot rely on voluntary enlistment, nor do we propose to introduce Universal Service for it, since that would give us more men than we really require, and would, if adopted, lead to the abolition of the Volunteers. The only alternative, therefore, appears to be to make the Ballot applicable to it in the manner already detailed, and in order to get the country to accept this it will be necessary to educate public opinion to realise that if we are to hold our own in the world, our citizens *must* be prepared to do their duty. Every nation in Europe, save our own, puts country first, and personal convenience second, and we cannot believe that the British nation will be less patriotic when they understand the vital need for the sacrifice they are asked to make. And, after all, that sacrifice is not such a very great one. Two years' service in the Second Army, with a short period of training while in the Reserve, is not a very heavy burden for a young man to bear, even if it is not found practicable to reduce the time with the Colours in the case of lads who have received some previous Military training. As regards the reserve training, it would be possible so to arrange it that it would interfere as little as possible with a man's ordinary avocations, while as regards the liability to be called out for active service, it may be pointed out that the stronger we are in a Military sense, the less prospect there is of our ever being called on to take the field. Had we possessed such an organisation at the time of the war in South Africa, it is certain the Boers would never have ventured to precipitate hostilities. They reckoned, as other nations may reckon, on our well-known Military feebleness, and calculated that we could not put into the field an Army sufficient to conquer them. That we were able to do so in the long run, was due solely to the assistance afforded by the Empire at large, for had we depended on our Regular Army alone, as then organised, we could never have concentrated a force sufficient to subdue the Boers. That assistance, however, valuable though it was, showed clearly that want of previous organisation and training cannot be adequately replaced by goodwill and individual effort, and afforded an object lesson for all time of the danger of leaving everything to be done in face of an enemy.

Our next great war may be with the Power that will give us no opportunity of putting our house in order during the progress of the campaign, and will not fail to profit by our initial blunders and mistakes. We have had our lesson at the hands of the Boers, let

us not fail to profit by it, lest on a future occasion worse should befall !

IX.—COMPOSITION OF THE THIRD ARMY.

The Third Army, as we have seen, would be composed entirely of Volunteers, who, in return for their services in this force would, under ordinary circumstances, be freed from the liability to serve in the Second Army. This concession might possibly lead to a rush to enter the Third Army, in which case it would be necessary in order to keep up the numbers of the Second Army, always the first consideration, to apply the Ballot for the Second Army to the extent necessary to all candidates for the Third Army, and only allow the remainder to enter that Army. To reduce the number of candidates it might be necessary to lay down that every member of the Third Army should provide his own uniform and equipment, pay his own expenses in camp, and on the march, and so forth. Experience, however, would soon show the proportion of men wishing to enter the Second and Third Armies respectively, and it would then be a comparatively easy matter so to adjust the balance as to secure a sufficient number of candidates for each, the principle aimed at being to ensure that all able-bodied youths, attaining the age deemed suitable for the commencement of Military service should, on a fixed date each year, be drafted into one or other of the Armies maintained for Home Defence. The period of service in the active portion of the Third Army could be so regulated as to provide sufficient vacancies for the number of recruits allotted to it each year, while the period of Reserve Service would be fixed with due regard to the strength of that reserve and to the extent of the liability it was considered necessary to impose on the members of it.

X.—ADVANTAGES OF THE PROPOSED SYSTEMS.

- (1) It would entail the recognition of the fact that every citizen owed to his country the duty of sharing personally in its defence.
- (2) It would, on account of the reduced period of active service proposed for youths who had received previous military training, lead to the adoption at all, or most schools, of a regular system of military training for all boys fit to undergo it, thereby both improving the physique and *morale* of the nation, and simplifying the question of providing for its defence.
- (3) It would ensure that our military machine was organized so as to meet our most pressing military needs, *i.e.*, the provision of a long-service force for service abroad in time of peace, and for the conduct of small wars ; the existence of a short-service force with large reserves, for garrison duty at Home and for carrying out military operations abroad on an extensive scale ; and also the formation of a Third Army composed of Volunteers, to

undertake the defence of the United Kingdom should it be necessary to send abroad our more highly-trained troops.

- (4) It would preserve the existing components of our military machine, and to a considerable extent, preserve their distinctive characteristics. Thus, the Regular Forces, though somewhat reduced, would form the basis of the First Army; the Militia, with which we associate the portion of the Regular Army not allotted to the First Army, and the Yeomanry, would form the Second Army; and the Volunteers would, when reorganised on a scientific basis, constitute the Third Army.
- (5) It would solve the difficulty, that is steadily increasing, of finding a sufficient supply of officers for our forces.
- (6) It would tend to increase the martial spirit of the nation, which, *pace* the views of certain politicians, is no bad asset in the national character.
- (7) It would, at the same time, make for peace by convincing other nations that we were serious in our intention to preserve our place in the world, and to hold fast to our possessions abroad.
- (8) In the event of the supply of recruits for the Navy ever becoming deficient, the principle of the Ballot could easily be applied to that service as well as to the Second Army.
- (9) It would give us the men we require, and so enable us to train and distribute them without having to pay undue regard to the state of the recruiting market.
- (10) It would obviate the waste of energy now entailed by keeping the same troops to fulfil two entirely different and incompatible sets of duties, *i.e.*, garrison duty abroad, and garrison duty at Home.
- (11) It would set our Navy free to carry out its legitimate duties, without any *arrière pensée* as to the necessity for providing for the defence of the United Kingdom.
- (12) It would form a model for our Colonies, and might, in course of time, be generally adopted by them, with such modifications as might be called for by local conditions. They would not, of course, require to keep up First Armies, but forces organised and recruited on the lines of our Second and Third Armies would enable them, not only to provide for their own defence, but to contribute important contingents to assist us in any extensive operations.
- (13) It would, to some extent, reduce the numbers of the unemployed, by providing steady employment for a large number of youths who would, otherwise, be thrown into the labour market.

- (14) It offers to every youth a choice of the manner in which he may elect to serve his country. If he does not enter the Navy, he can either enter the Second Army with a view to passing on to the First Army and embarking on a permanent military career; or he can enter the Second Army with the idea of reverting to civil life as soon as possible; or he can volunteer for the Third Army in order to interfere with his ordinary pursuits as little as possible.
- (15) It entails the minimum of compulsion, for, to judge by the number of men who now elect to serve in the various branches of our Regular and Auxiliary Forces, there will always be a large number of youths ready to volunteer for service in the three Armies, and, consequently, the number *actually* affected by the Ballot will be comparatively small, though doubtless a good many will volunteer for the Third Army in order to escape the liability. Such moral pressure, however, can hardly be classed as irksome.
- (16) It provides that men selected by the Ballot shall, as far as possible, be allowed to serve in their own districts, and it entails on them no liability to serve abroad, except in the case of war, or national emergency.
- (17) It reduces the period of Colour Service to the lowest possible period, consistent with an efficient military training.
- (18) It counts on rendering the Reserve Service as little irksome as possible, and on interfering as little as feasible with the calls of civil avocations.
- (19) It enables a youth to go through a course of military training during his school-days, and thereby reduce the period of service with the Colours should he wish to do so.
- (20) It might even be possible so to arrange matters that training in the Second Army would entail little more than an extended Militia course.
- (21) By arranging that all recruits for a unit should commence their training simultaneously, that training would be less tedious, and friends and comrades could be kept together.
- (22) It aims at so instructing the youth of the nation that they shall consider it, not only a duty, but an honour, to serve their country; while not to be accepted for such service shall be deemed a disgrace and a degradation.
- (23) The system proposed reduces to a minimum the number of men entertained for service abroad, and, by introducing long-service in the First Army, tends to cut down

very largely the amount of money expended in the constant transport of reliefs, gratuities to discharged men, and Home passages. It is true that higher pay is suggested for men with longer service to their credit, and that pensions are proposed for all men completing their full period of service, but, on the other hand, as no raw recruits will be enlisted for the First Army, we shall get much better value for our money, we shall save the expense of a large recruiting establishment, and probably effect a sensible reduction in hospital and non-effective charges.

- (24) The number of men proposed for the Second Army is only about equal to the present Militia, the proposed Militia Reserve and the Yeomanry ; and the Reserve of the Second Army would cost very little as the Reservists would only receive pay when actually called up for training.
- (25) The Third Army would cost little more than the present Volunteers.
- (26) The cost of the Militia and Yeomanry, as a separate force, would be saved.
- (27) It is generally recognised that the cheapest military machine, other things being equal, is that which has the fewest men with the Colours in proportion to the number of its reserves. By the method proposed the number of our reserves will be very large in proportion to our active forces.
- (28) The application of the Ballot to the Second Army will entail no extra expense, beyond that of such machinery as may be necessary to enforce it.
- (29) On the other hand, its application will tend to increase the number of volunteers for the Third Army, the cheapest of all our forces, since service in it will be without remuneration.
- (30) Universal service, or conscription, might give us a cheaper army, but, since those methods are barred, we cannot offer men, except in the Third Army, a merely nominal wage as other nations do.
- (31) The tendency is for wages to rise, and for the cost of living to become more expensive, but we cannot go on indefinitely raising the rates of pay offered to our soldiers in order to compete with the labour market, especially as the cost of our Navy steadily increases and we dare not curtail our expenditure on it. The small measure of compulsion recommended will, however, ensure our supply of recruits and give them to us at a moderate cost.
- (32) We consider, too, that the value of the training afforded to the youth of the nation under the system proposed

the improved health and physique resulting from it, and the habits of order, combination, and discipline imparted by it, will prove, in course of time, of such value to the wage-earning power of the nation that it will, even if indirectly, tend to relatively cheapen the cost of the Army and of the defensive system of the United Kingdom.

- (33) Finally, it must be remembered that the cost of arms, ammunition, warlike stores, and equipment, will be much the same under any system of organisation, with the exception that to be prepared is always far cheaper than to be unprepared, for money saved in preparation before a crisis is likely to be spent many times over when the sudden need arises.

XI.—DISADVANTAGES OF THE PROPOSED SYSTEM.

We do not pretend that the system proposed is entirely without disadvantages, but we hold that such are inevitable under any conceivable system of military organisation. The disadvantages of our present method of purely voluntary enlistments are so glaring and so generally admitted that it seems hardly necessary to discuss them, while the outcry that is raised in the public press whenever any suggestion is put forward that tends to add to the cost of the Army clearly shows that we cannot afford to still further increase the pay of the soldier in the hopes of tapping fresh recruiting areas. The problem to be solved is how to secure the able-bodied youth of the nation for service in the various branches of our military machine, and, it seems to us, that this can only be done in one way, *i.e.*, by insisting on the principle that all *must* give their services, for a certain period, in order to undergo the necessary training, and that subsequently, they must hold themselves ready, during their period of reserve service, to come forward when required for the defence of their country. The chief objection that can be urged against this proposal is that it takes men away from civil life just at the most important time, and interferes with their technical education in whatever profession or trade they mean to adopt. That this is an objection must be admitted, but it is one that has been experienced by all the great Military Powers. The latter find, however, that any disadvantages there may be, are more than counterbalanced by the national security that results, and by the advantages that accrue to the nation by a system of universal military training. We are often told that the spirit of militarism that would be fostered by any compulsory military training in this country would be harmful; that loss of trade and a decrease in exports would mark the imposition of military service; and that the "tax of blood" would lead to a marked falling off in the nation's prosperity. To judge from the example of Germany, however, quite the contrary would be the case, for the majority of Germans consider that the enormous increase in their commerce, their prosperity, and their national wealth is as

much due to the training afforded in the Army as to any other cause.

The object that we should bear in view is to obtain these advantages at as small a cost as possible, and this we have endeavoured to do by reducing the period of active military service to the lowest possible limits, and by allowing cadet service to be accepted as an excuse for reducing it still further. It is often suggested that we should limit ourselves to the enforcement of military training in our schools, so as to turn out as many men as possible fit to bear arms in an emergency. This, of course, avoids the disadvantage of taking men away from their ordinary work after they leave school, but, on the other hand, it still leaves us without an Army "*in esse*," and means that in a national emergency nothing would be ready, and that our fighting force would have to be created *de novo*. In fact we should find ourselves in exactly the same position as we were in at the time of the war in South Africa, except for the improvement that might be expected in the character of the recruits, most of whom would know their drill and be able to handle a rifle. The disadvantage of having to improvise on the eve of hostilities is, however, far greater, in our opinion, than that of interfering with civil pursuits, and we hold, therefore, that the nation would do well to accept the burden of such compulsion as is entailed by the enforcement of the Ballot with all its attendant disadvantages, since in that way alone is it possible to create an Army worthy of the Empire it has to defend.

Having accepted the principle, it might, in practice, be found possible to so modify the details as to reduce the disadvantages of service in the Second Army to a minimum. Hitherto, we have treated the question of the training of that Army from a purely military standpoint, but it may be fitly pointed out here, that it might be possible, and even desirable, so to modify the conditions of service in it, as to discount the objections of those who would otherwise oppose the scheme tooth and nail.

From a military point of view, certainly, we should like to see the full term of service exacted, believing that this would result in a higher degree of efficiency, but rather than sacrifice the principle of the citizen's duty to serve, we would be willing to so regulate the conditions of training that they would interfere very little with a man's civil occupations.

We do not feel called on to enter into any detailed account of how this could be done, beyond remarking that the problem has been solved by the Swiss, and their system is well known to all who take an interest in military matters.

The great point is to secure acceptance of the principle that every man should serve his country in the Second Army, unless doing so in some other portion of the national forces. Having secured this, the details of service in that Army could be easily settled, any necessary modification being subsequently introduced as experience might show to be necessary.

XII.—THE EXPANSION OF OUR FORCES IN TIME OF WAR.

Finally, it remains to be considered how far the system proposed will lend itself to the expansion of our Forces in time of War.

The basis of the system is, as has been pointed out before, to keep as few men as possible with the Colours, in order to build up a really large reserve.

The First Army.

It is true that no reserve has been proposed for the First Army, since it was considered advisable to make that a long-service force always ready for service abroad, but on the mobilisation of the Second Army it would always be possible to utilise a portion of it to relieve the garrisons furnished by the First Army, so as to set them free for employment in the Field Army. Thus in the event of a war for the defence of India, it would be natural to employ in the first line the seasoned troops of the First Army, forming the garrison of our great Dependency, and replace them by the less highly-trained units of the Second Army. And, similarly, the garrisons of other places could be relieved by the Second Army, so that, provided we held the command of the sea, in due course the bulk of the First Army would be available to take the field.

The Second Army.

In the case of the Second Army, however, large reserves have been provided for, and these would be called out as soon as war became imminent. The number of Reservists called out would, of course, depend on the circumstances of the case, and the younger men would, naturally, be called out first. The total strength of the Second Army when fully mobilised would depend on the strength at which the active force had been fixed, and on the period of reserve service that had been imposed. We assumed, when dealing with the constitution of the Second Army, that the active force would be 200,000 men, serving for two years, with eight years' service in the Reserve, and calculated that this would produce a Field Army of 700,000 men, available to take its place at the seat of war alongside the First Army. Should an even greater expansion be deemed necessary, this could be done either by increasing the number of men serving with the Colours, or by increasing the period of service in the Reserve.

It would also be possible to form a second class of the Reserve consisting of men between, say, thirty and forty years of age, who would only be liable to be called out when the first class of the Reserve had been mobilised, and would then be available for garrison duty at Home or abroad.

In fact, the Second Army, thanks to the application of the Ballot, would be a most elastic force, and could be counted on to give us practically any numbers we might require.

The Third Army.

It would only be a very desperate struggle that could call for the mobilisation of the Third Army, for under all ordinary conditions

the First and Second Armies should prove ample for all our requirements.

In the event of the necessity arising, however, the mobilisation of the Third Army would take place on the same lines as that of the Second Army, such reservists as were necessary to complete units to strength being called out.

The total strength that could be mustered would depend chiefly on the period of reserve service fixed for the Third Army, but, in any case, the active strength of 250,000 men we have assumed, would provide a force amply sufficient to undertake the defence of the United Kingdom; for the absence abroad of our First and Second Armies would ensure that a very large portion of the enemy's troops were occupied by them, while it would also imply that we held command of the sea.

Supposing, however, that we had lost this by some unforeseen combination of circumstances, and that a serious invasion was really threatened, we should be able to put into the field the total strength of the Third Army, which, with all its reserves, should amount to, let us say, between three and four hundred thousand men, while the pensioners of the First Army and the men who had completed their service in the reserve of the Second and Third Armies would provide another large contingent, all trained to the use of arms.

Humanly speaking, invasion under such conditions would be practically impossible, even should an opportunity for it occur, and we consider it as far more likely that a portion of the Third Army would be permitted to volunteer to serve abroad in support of the First and Second Armies than that it would be actually employed in defending the shores of this country.

XIII.—VALUE OF THESE FORCES.

We see, therefore, that the method of securing the services of the able-bodied youth of the nation submitted in the previous pages, lends itself to a very ready and efficient expansion of our military forces in time of war; that, in fact, it enables us, like the Continental Powers, to assemble the Nation in arms, and to deploy our strength in any direction, and to any extent, that may be deemed necessary. As to the relative value of our military forces and those of any possible adversary, we should start with the initial advantage of possessing a considerable long-service army, always mobilised and ready for instant action, highly trained, inured to the vicissitudes and hardships of foreign service, and, thanks to our constant small wars, experienced in campaigning.

Our Second Army would, possibly, be somewhat inferior in training to the enemy's picked troops, but, taken as a whole, we believe that it would, at the commencement of a campaign, be quite equal to the bulk of the troops it would have to meet, while, after a few months' experience, in the field, we believe that it would be considerably better. Much would, however, depend on the period of service that was exacted, for the more this is reduced the

us not fail to profit by it, lest on a future occasion worse should befall:

IX. - COMPOSITION OF THE THIRD ARMY.

The Third Army, as we have seen, would be composed entirely of Volunteers, who, in return for their services in this force, would, under ordinary circumstances, be freed from the liability to serve in the Second Army. This concession might possibly lead to a rush to enter the Third Army, in which case it would be necessary in order to keep up the numbers of the Second Army always to first consideration, to apply the Ballot for the Second Army to the extent necessary to all candidates for the Third Army and to allow the remainder to enter that Army. To reduce the number of candidates it might be necessary to lay down that every member of the Third Army should provide his own uniform and equipment, pay his own expenses in camp and on the march and so forth. Experience, however, would soon show the proportion of men wishing to enter the Second and Third Armies respectively, and it would then be a comparatively easy matter so to adjust the balance as to secure a sufficient number of candidates for each, the principle aimed at being to ensure that all able-bodied youths attaining the age deemed suitable for the commencement of Military Service, on a fixed date each year, be drafted into one or other of the Armies maintained for Home Defence. The period of service in the proportion of the Third Army could be so regulated as to provide sufficient vacancies for the number of recruits allotted to it each year, while the period of Reserve Service would be fixed with regard to the strength of that reserve and to the extent of the liability it was considered necessary to impose on the military

A. ADVANTAGES OF THE PROPOSED SYSTEMS.

- (1) It would entail the negotiation of the fact that a nation owed to this country the duty of sharing personnel in its defence.
- (2) It would, on account of the reduced period of a service, deprive soldiers who had received previous military training, of the opportunity of a further course of a more complete system of military training, thereby leading to a deterioration of the army both in respect of physical and moral condition of the men and soldiers, to a reduction of personnel and to a deterioration of the military preparation of the soldiers.
- (3) It would ensure that, on the very moment when the need arose to mobilize the army, the step would be taken to the preparation of a large number of soldiers, who would not be able to perform the military service, because they would not have received the necessary military training.

undertake the defence of the United Kingdom should it be necessary to send abroad our more highly-trained troops.

- (4) It would preserve the existing components of our military machine, and to a considerable extent, preserve their distinctive characteristics. Thus, the Regular Forces, though somewhat reduced, would form the basis of the First Army; the Militia, with which we associate the portion of the Regular Army not allotted to the First Army, and the Yeomanry, would form the Second Army; and the Volunteers would, when reorganised on a scientific basis, constitute the Third Army.
- (5) It would solve the difficulty, that is steadily increasing, of finding a sufficient supply of officers for our forces.
- (6) It would tend to increase the martial spirit of the nation, which, *pace* the views of certain politicians, is no bad asset in the national character.
- (7) It would, at the same time, make for peace by convincing other nations that we were serious in our intention to preserve our place in the world, and to hold fast to our possessions abroad.
- (8) In the event of the supply of recruits for the Navy ever becoming deficient, the principle of the Ballot could easily be applied to that service as well as to the Second Army.
- (9) It would give us the men we require, and so enable us to train and distribute them without having to pay undue regard to the state of the recruiting market.
- (10) It would obviate the waste of energy now entailed by keeping the same troops to fulfil two entirely different and incompatible sets of duties, *i.e.*, garrison duty abroad, and garrison duty at Home.
- (11) It would set our Navy free to carry out its legitimate duties, without any *arrière pensée* as to the necessity for providing for the defence of the United Kingdom.
- (12) It would form a model for our Colonies, and might, in course of time, be generally adopted by them, with such modifications as might be called for by local conditions. They would not, of course, require to keep up First Armies, but forces organised and recruited on the lines of our Second and Third Armies would enable them, not only to provide for their own defence, but to contribute important contingents to assist us in any extensive operations.
- (13) It would, to some extent, reduce the numbers of the unemployed, by providing steady employment for a large number of youths who would, otherwise, be thrown into the labour market.

less efficient must be the training that can be given, for we cannot hope in a few months to produce the same results that it takes other nations years to attain.

Our Third Army would, naturally, be inferior in training to foreign troops, but as it would not be likely to be required for active use for a considerable time after the opening of a campaign there would be ample opportunity for remedying its defects and for increasing its efficiency.

We have seen what the manhood of the nation is capable of even when untrained and inexperienced. Given the training and experience it lacked in South Africa, we feel confident that it will prove equal to any task that might be imposed upon it, and we are equally assured that if our military authorities are given the material to work on, they will soon fashion a machine for war that will answer all requirements and ensure the safety, honour, and welfare of His Majesty's dominions. Hitherto, our military organisation has proved a failure, because those responsible for it were called on to make bricks without straw to create an army without men a national force without national support. The terrible results of that divorce between the Army and the Nation have been indelibly written on the pages of our military history, and that they have not been written large on our national history as well is due to the fact that our Navy has always stood in the breach, and that we have had the most extraordinary good fortune in escaping the logical consequences of our mistakes. Let us beware, however, how we tempt fortune too far, and ere it is too late let us see a nation revert to the old ideal that every citizen is in duty bound to learn the use of arms, and be prepared to wield them if necessary in defence of all that is dear to him.

IV. THE YOUTH OF THE NATION.

We may assume roughly that the number of youths entering an age suitable for military service is about 680,000 per annum.

Of this number a certain proportion pass into the Navy, while a very serious percentage is physically unfit for military service. According to the Army Medical Department's Report for the year 1904, the percentage of rejections in the case of recruits who have been by the Medical Officers was no less than 32, while, taking those found unfit within three months of enlistment, the percentage amounted to 40. It would, therefore, be a reasonable estimate by the recruiting staff that at any one time even in a normal year for men so weak and unfit that they could not be expected to be of any use for service in the Army, it is probable that the total number of these medically unfit youths would amount to something like 50 per cent of the youth of the nation. That this shows a most serious state of affairs in a country from a purely military standpoint, but from the point of view of the physical well-being of the nation is beyond question, and it is a matter of great concern to every citizen by whom it is borne in mind that the nation is the stock and

evil is doubtless due, in a very large measure, to such preventible causes as bad feeding, insufficient clothing, insanitary dwellings and the crowded life of our great cities, causes that tend to accentuate existing maladies and to induce new ones. It would not, of course, be feasible to entirely remove all these causes, but much might be done to mitigate them by the careful periodical medical examination of all school children, with a view to take their various ailments in hand in time; by the provision of wholesome food and suitable clothing to such children as require them owing to the poverty of their parents; by the introduction of regular physical exercises into all schools; and by a proper system of military training for all boys above a certain age and of suitable physique. It may be objected that all this would cause enormous expense and cast an increased burden on the taxpayer. Undoubtedly it would, but as the country has accepted the principle of compulsory education it should see to it that that education includes all the elements necessary to turn out good and useful citizens, capable of taking their due share in the government and in the defence of their country. It is of little use to feed the mind and starve the body. To turn out citizens mentally sound, but physically unfit, is just as bad as to leave them steeped in ignorance; and to make no effort to improve our stock is as criminal as it is short-sighted.

According to the Army Medical Department Report for 1903, in that year no fewer than 4,400 recruits were rejected for the loss or decay of many teeth; 2,535 were rejected for defective vision; 3,684 for being under the standard of chest measurement; and 1,007 for being under weight. This by no means exhausts the list, but it is sufficient to show what terrible wastage is caused by the lack of the care and attention that such cases require, for it is safe to conclude that a very large number of them could have been cured, or very much improved, by proper medical treatment in the early stages of their development.

We hold, therefore, that it is the duty of the State to take such measures as may be necessary to safeguard the health of the rising generation, and to ensure, as far as possible, its physical and moral well-being. But the bargain should not be an entirely one-sided one. In return for all that the State gives now, or may give in future, some payment should be exacted, and this should take the form of personal military service, on the lines we have already suggested. The military training of the youth of the nation would be given as part and parcel of the ordinary school curriculum, and on leaving school every lad would be expected to enter one or other of the various branches of His Majesty's Service, for a definite period.

XV.—HOW THE SCHEME WOULD WORK.

Taking the number of youths attaining an age suitable for military service at 380,000 per annum, and deducting 50 per cent for those physically unfit or entering the Navy, there remains a balance of 190,000.

us not fail to profit by it, lest on a future occasion worse should befall!

IX.- COMPOSITION OF THE THIRD ARMY.

The Third Army, as we have seen, would be composed entirely of Volunteers, who, in return for their services in this Army, under ordinary circumstances, be freed from the liability to serve in the Second Army. This concession might possibly lead to a desire to enter the Third Army, in which case it would be necessary in order to keep up the numbers of the Second Army always to take the first consideration, to apply the Ballot for the Second Army to the extent necessary to all candidates for the Third Army and to allow the remainder to enter that Army. To reduce the number of candidates it might be necessary to lay down that every man entering the Third Army should provide his own uniform and equipment. Experience however, would soon show the proportion of men wishing to enter the Second and Third Armies respectively and it would then be a comparatively easy matter so to adjust the balance as to secure a sufficient number of candidates for each the programme aimed at being to ensure that all able bodied youths attaining the age deemed suitable for the commencement of Military Service should on a fixed date each year, be drafted into one or other of the Armies maintained for Home Defence. The period of service in the Third Army could be so regulated as to provide sufficient vacancies for the number of recruits wanted to replace year while the period of Reserve Service would be fixed according to the strength of that reserve and to the extent of the liability it was considered necessary to impose on the men entering it.

A. ADVANTAGES OF THE PROPOSED SYSTEMS.

- (1) It would entail the recognition of the fact that every citizen owes to his country the duty of sharing personally in its defence.
- (2) It would, on account of the reduced period of training, secure a proportionately smaller expenditure on military training and to the advantage of all the boys of a regular system of military training, the boys not attending at a military boarding school, who would be spared the expense of tuition and the loss of the best period of their training years.
- (3) It would ensure that only the very best men would be selected as being the fittest for pressing into the ranks of the proposed Home Defence Army, thus ensuring that the best of the youth of the country would be available for the Home Defence Army, and that the best of the youth of the country would be available for the Home Defence Army, and that the best of the youth of the country would be available for the Home Defence Army.

undertake the defence of the United Kingdom should it be necessary to send abroad our more highly-trained troops.

- (4) It would preserve the existing components of our military machine, and to a considerable extent, preserve their distinctive characteristics. Thus, the Regular Forces, though somewhat reduced, would form the basis of the First Army; the Militia, with which we associate the portion of the Regular Army not allotted to the First Army, and the Yeomanry, would form the Second Army; and the Volunteers would, when reorganised on a scientific basis, constitute the Third Army.
- (5) It would solve the difficulty, that is steadily increasing, of finding a sufficient supply of officers for our forces.
- (6) It would tend to increase the martial spirit of the nation, which, *pace* the views of certain politicians, is no bad asset in the national character.
- (7) It would, at the same time, make for peace by convincing other nations that we were serious in our intention to preserve our place in the world, and to hold fast to our possessions abroad.
- (8) In the event of the supply of recruits for the Navy ever becoming deficient, the principle of the Ballot could easily be applied to that service as well as to the Second Army.
- (9) It would give us the men we require, and so enable us to train and distribute them without having to pay undue regard to the state of the recruiting market.
- (10) It would obviate the waste of energy now entailed by keeping the same troops to fulfil two entirely different and incompatible sets of duties, *i.e.*, garrison duty abroad, and garrison duty at Home.
- (11) It would set our Navy free to carry out its legitimate duties, without any *arrière pensée* as to the necessity for providing for the defence of the United Kingdom.
- (12) It would form a model for our Colonies, and might, in course of time, be generally adopted by them, with such modifications as might be called for by local conditions. They would not, of course, require to keep up First Armies, but forces organised and recruited on the lines of our Second and Third Armies would enable them, not only to provide for their own defence, but to contribute important contingents to assist us in any extensive operations.
- (13) It would, to some extent, reduce the numbers of the unemployed, by providing steady employment for a large number of youths who would, otherwise, be thrown into the labour market.

- (14) It offers to every youth a choice of the manner in which he may elect to serve his country. If he does not enter the Navy, he can either enter the Second Army with a view to passing on to the First Army and embarking on a permanent military career, or he can enter the Second Army with the idea of reverting to civil life as soon as possible, or he can volunteer for the Third Army in order to interfere with his ordinary pursuits as little as possible.
- (15) It entails the minimum of compulsion, for, to judge by the number of men who now elect to serve in the various branches of our Regular and Auxiliary Forces there will always be a large number of youths ready to volunteer for service in the three Armies; and consequently, the number *actually* affected by the Ballot will be comparatively small, though doubtless a good many will volunteer for the Third Army in order to escape the liability. Such moral pressure, however, can hardly be classed as irksome.
- (16) It provides that men selected by the Ballot shall, as far as possible, be allowed to serve in their own districts, and it entails on them no liability to serve abroad, except in the case of war, or national emergency.
- (17) It reduces the period of Colour Service to the least possible period, consistent with an efficient military training.
- (18) It counts on rendering the Reserve Service as little irksome as possible, and on interfering as little as possible with the cares of civil avocations.
- (19) It enables a youth to go through a course of military training during his school days, and thereby reduce the period of service with the Colours should he wish to do so.
- (20) It might even be possible so to arrange matters that training in the Second Army would entail less on a youth than an extended Militia course.
- (21) By arranging that all recruits for a unit should be of the same age, their training simultaneously, that training would be less tedious, and friends and comrades would be kept together.
- (22) It avoids so instructing the youth of the nation that they should consider it not only a duty but an honour to serve their country, which is to be accomplished by such means as should be deemed appropriate and agreeable to the Nation.
- (23) The system proposed leads to a more efficient reserve abroad, and by increasing the number of men serving in the First Army tends to cut down

very largely the amount of money expended in the constant transport of reliefs, gratuities to discharged men, and Home passages. It is true that higher pay is suggested for men with longer service to their credit, and that pensions are proposed for all men completing their full period of service, but, on the other hand, as no raw recruits will be enlisted for the First Army, we shall get much better value for our money, we shall save the expense of a large recruiting establishment, and probably effect a sensible reduction in hospital and non-effective charges.

- (24) The number of men proposed for the Second Army is only about equal to the present Militia, the proposed Militia Reserve and the Yeomanry ; and the Reserve of the Second Army would cost very little as the Reservists would only receive pay when actually called up for training.
- (25) The Third Army would cost little more than the present Volunteers.
- (26) The cost of the Militia and Yeomanry, as a separate force, would be saved.
- (27) It is generally recognised that the cheapest military machine, other things being equal, is that which has the fewest men with the Colours in proportion to the number of its reserves. By the method proposed the number of our reserves will be very large in proportion to our active forces.
- (28) The application of the Ballot to the Second Army will entail no extra expense, beyond that of such machinery as may be necessary to enforce it.
- (29) On the other hand, its application will tend to increase the number of volunteers for the Third Army, the cheapest of all our forces, since service in it will be without remuneration.
- (30) Universal service, or conscription, might give us a cheaper army, but, since those methods are barred, we cannot offer men, except in the Third Army, a merely nominal wage as other nations do.
- (31) The tendency is for wages to rise, and for the cost of living to become more expensive, but we cannot go on indefinitely raising the rates of pay offered to our soldiers in order to compete with the labour market, especially as the cost of our Navy steadily increases and we dare not curtail our expenditure on it. The small measure of compulsion recommended will, however, ensure our supply of recruits and give them to us at a moderate cost.
- (32) We consider, too, that the value of the training afforded to the youth of the nation under the system proposed

the improved health and physique resulting from it, and the habits of order, combination, and discipline imparted by it, will prove in course of time of such value to the wage-earning power of the nation that it will even indirectly tend to relatively cheapen the cost of the Army and of the defensive system of the United Kingdom.

- (33) Finally it must be remembered that the cost of arms, ammunition, warlike stores, and equipment will be much the same under any system of organization with the exception that to be prepared is always far cheaper than to be unprepared for money saved in preparation before a crisis is likely to be spent many times over when the sudden need arises.

XI. --DISADVANTAGES OF THE PROPOSED SYSTEM.

We do not pretend that the system proposed is entirely without disadvantages, but we hold that such are inevitable under any conceivable system of military organization. The disadvantages of our present method of purely voluntary enlistments are self-evident and so generally admitted that it seems hardly necessary to discuss them, while the outcry that is raised in the public press whenever any suggestion is put forward that tends to add to the cost of the Army clearly shows that we cannot afford to stand further in ease the eye of the soldier in the hope of tapping fresh recruiting areas. The problem to be solved is how to secure the able-bodied youth of the nation for service in the various branches of our military machine, and it seems to us that this can only be done in one way, namely, insisting on the principle that all citizens of their own sex for a certain period in order to undergo the necessary training, and that subsequently they must hold those services ready during the period of reserve service to be called forward when required for the duties of their country. The objection is that it can be urged against this proposal is that it does not in any way diminish the cost of the most important line of fortifications with their technical and other man who are prepared not to do the work and to adapt. But this is an objection that is clearly not new, that has been experienced by all the great Military Powers. The objection is however that very desirable results have been obtained by means of voluntary enlistment, the only drawback being that the cost of the Army is too great to be borne by the Government. We are not, however, prepared to say that the cost of the Army is too great to be borne by the Government, but we are prepared to say that the cost of the Army is too great to be borne by the Government.

much due to the training afforded in the Army as to any other cause.

The object that we should bear in view is to obtain these advantages at as small a cost as possible, and this we have endeavoured to do by reducing the period of active military service to the lowest possible limits, and by allowing cadet service to be accepted as an excuse for reducing it still further. It is often suggested that we should limit ourselves to the enforcement of military training in our schools, so as to turn out as many men as possible fit to bear arms in an emergency. This, of course, avoids the disadvantage of taking men away from their ordinary work after they leave school, but, on the other hand, it still leaves us without an Army "*in esse*," and means that in a national emergency nothing would be ready, and that our fighting force would have to be created *de novo*. In fact we should find ourselves in exactly the same position as we were in at the time of the war in South Africa, except for the improvement that might be expected in the character of the recruits, most of whom would know their drill and be able to handle a rifle. The disadvantage of having to improvise on the eve of hostilities is, however, far greater, in our opinion, than that of interfering with civil pursuits, and we hold, therefore, that the nation would do well to accept the burden of such compulsion as is entailed by the enforcement of the Ballot with all its attendant disadvantages, since in that way alone is it possible to create an Army worthy of the Empire it has to defend.

Having accepted the principle, it might, in practice, be found possible to so modify the details as to reduce the disadvantages of service in the Second Army to a minimum. Hitherto, we have treated the question of the training of that Army from a purely military standpoint, but it may be fitly pointed out here, that it might be possible, and even desirable, so to modify the conditions of service in it, as to discount the objections of those who would otherwise oppose the scheme tooth and nail.

From a military point of view, certainly, we should like to see the full term of service exacted, believing that this would result in a higher degree of efficiency, but rather than sacrifice the principle of the citizen's duty to serve, we would be willing to so regulate the conditions of training that they would interfere very little with a man's civil occupations.

We do not feel called on to enter into any detailed account of how this could be done, beyond remarking that the problem has been solved by the Swiss, and their system is well known to all who take an interest in military matters.

The great point is to secure acceptance of the principle that every man should serve his country in the Second Army, unless doing so in some other portion of the national forces. Having secured this, the details of service in that Army could be easily settled, any necessary modification being subsequently introduced as experience might show to be necessary.

XII.—THE EXPANSION OF OUR FORCES IN TIME OF WAR.

Finally, it remains to be considered how far the system proposed will lend itself to the expansion of our Forces in time of War.

The basis of the system is, as has been pointed out before, to keep as few men as possible with the Colours, in order to build up a really large reserve.

The First Army.

It is true that no reserve has been proposed for the First Army since it was considered advisable to make that a long-service force always ready for service abroad, but on the mobilisation of the Second Army it would always be possible to utilise a portion of it to relieve the garrisons furnished by the First Army, so as to set them free for employment in the Field Army. Thus in the event of a war for the defence of India, it would be natural to employ in the first line the seasoned troops of the First Army, forming the garrison of our great Dependency, and replace them by the less highly trained units of the Second Army. And, similarly, the garrisons of other places could be relieved by the Second Army, so that provided we held the command of the sea in due course the bulk of the First Army would be available to take the field.

The Second Army.

In the case of the Second Army, however, large reserves have been provided for, and these would be called out as soon as war became imminent. The number of Reservists called out would, of course, depend on the circumstances of the case, and the younger men would naturally be called out first. The total strength of the Second Army when fully mobilised would depend on the strength at which the active force had been fixed, and on the period of reserve service that had been imposed. We assumed, when dealing with the constitution of the Second Army, that the active force would be 200,000 men serving for two years, with eight years' service in the Reserve, and estimated that this would produce a Field Army of 700,000 men, available to take its place at the seat of war alongside the First Army. Should an even greater expansion be deemed necessary, this could be done either by increasing the number of men serving with the Colours or by increasing the period of service in the Reserve.

It would also be possible to form a second class of the Reserve consisting of men between say thirty and forty years of age, who would only be liable to be called out when the first class of the Reserve had been mobilised and would then be available for garrison duty at Home or abroad.

In fact the Second Army, thanks to the application of the Ballot would be a most elastic force, and could be counted on to give us practically any numbers we might require.

The Third Army.

It would only be a very desperate struggle that could call for the mobilisation of the Third Army, for in a ordinary conflict we

the First and Second Armies should prove ample for all our requirements.

In the event of the necessity arising, however, the mobilisation of the Third Army would take place on the same lines as that of the Second Army, such reservists as were necessary to complete units to strength being called out.

The total strength that could be mustered would depend chiefly on the period of reserve service fixed for the Third Army, but, in any case, the active strength of 250,000 men we have assumed, would provide a force amply sufficient to undertake the defence of the United Kingdom; for the absence abroad of our First and Second Armies would ensure that a very large portion of the enemy's troops were occupied by them, while it would also imply that we held command of the sea.

Supposing, however, that we had lost this by some unforeseen combination of circumstances, and that a serious invasion was really threatened, we should be able to put into the field the total strength of the Third Army, which, with all its reserves, should amount to, let us say, between three and four hundred thousand men, while the pensioners of the First Army and the men who had completed their service in the reserve of the Second and Third Armies would provide another large contingent, all trained to the use of arms.

Humanly speaking, invasion under such conditions would be practically impossible, even should an opportunity for it occur, and we consider it as far more likely that a portion of the Third Army would be permitted to volunteer to serve abroad in support of the First and Second Armies than that it would be actually employed in defending the shores of this country.

XIII.—VALUE OF THESE FORCES.

We see, therefore, that the method of securing the services of the able-bodied youth of the nation submitted in the previous pages, lends itself to a very ready and efficient expansion of our military forces in time of war; that, in fact, it enables us, like the Continental Powers, to assemble the Nation in arms, and to deploy our strength in any direction, and to any extent, that may be deemed necessary. As to the relative value of our military forces and those of any possible adversary, we should start with the initial advantage of possessing a considerable long-service army, always mobilised and ready for instant action, highly trained, inured to the vicissitudes and hardships of foreign service, and, thanks to our constant small wars, experienced in campaigning.

Our Second Army would, possibly, be somewhat inferior in training to the enemy's picked troops, but, taken as a whole, we believe that it would, at the commencement of a campaign, be quite equal to the bulk of the troops it would have to meet, while, after a few months' experience, in the field, we believe that it would be considerably better. Much would, however, depend on the period of service that was exacted, for the more this is reduced the

less efficient must be the training that can be given, for we cannot hope in a few months to produce the same results that it takes other nations years to attain.

Our Third Army would, naturally, be inferior in training to foreign troops, but as it would not be likely to be required for active use for a considerable time after the opening of a campaign there would be ample opportunity for remedying its defects and for increasing its efficiency.

We have seen what the manhood of the nation is capable of, even when untrained and inexperienced. Given the training and experience it lacked in South Africa, we feel confident that it would prove equal to any task that might be imposed upon it, and we feel equally assured that if our military authorities are given the material to work on, they will soon fashion a machine for war that will answer all requirements and ensure the safety, honour, and welfare of His Majesty's dominions. Hitherto, our military organization has proved a failure, because those responsible for it were called on to make bricks without straw, to create an army without men, a national force without national support. The fatal results of that divorce between the Army and the Nation have been indelibly written on the pages of our military history, and that they have not been written large on our national history as well, is due to the fact that our Navy has always stood in the breach, and that we have had the most extraordinary good fortune in escaping the logical consequences of our mistakes. Let us beware, however, how we tempt fortune too far, and, ere it is too late, let us, as a nation, revert to the old ideal that every citizen is in duty bound to learn the use of arms, and be prepared to wield them, if necessary, in defence of all that is dear to him.

XIV.—THE YOUTH OF THE NATION.

We may assume, roughly, that the number of youths attaining an age suitable for military service is about 380,000 per annum.

Of this number a certain proportion passes into the Navy, while a very serious percentage is physically unfit for military service. According to the Army Medical Department Report for the year 1903, the percentage of rejections in the case of recruits actually examined by the Medical Officers was no less than 32, while adding those found unfit within three months of enlistment, the percentage of unfit amounted to 33·6. If we add to this the number of men rejected by the recruiting staff without any medical examination, and allow for men so weak and puny that they could not hope to be accepted for service in the Army, it is probable that the total numbers of those medically unfit to serve would amount to something like 50 per cent of the youth of the nation. That this shows a most serious state of affairs, not only from a purely military standpoint, but from the point of view of the physical well-being of the nation, is beyond question, and the country ought to welcome any means by which this terrible physical deterioration could be checked. The

evil is doubtless due, in a very large measure, to such preventible causes as bad feeding, insufficient clothing, insanitary dwellings and the crowded life of our great cities, causes that tend to accentuate existing maladies and to induce new ones. It would not, of course, be feasible to entirely remove all these causes, but much might be done to mitigate them by the careful periodical medical examination of all school children, with a view to take their various ailments in hand in time; by the provision of wholesome food and suitable clothing to such children as require them owing to the poverty of their parents; by the introduction of regular physical exercises into all schools; and by a proper system of military training for all boys above a certain age and of suitable physique. It may be objected that all this would cause enormous expense and cast an increased burden on the taxpayer. Undoubtedly it would, but as the country has accepted the principle of compulsory education it should see to it that that education includes all the elements necessary to turn out good and useful citizens, capable of taking their due share in the government and in the defence of their country. It is of little use to feed the mind and starve the body. To turn out citizens mentally sound, but physically unfit, is just as bad as to leave them steeped in ignorance; and to make no effort to improve our stock is as criminal as it is short-sighted.

According to the Army Medical Department Report for 1903, in that year no fewer than 4,400 recruits were rejected for the loss or decay of many teeth; 2,535 were rejected for defective vision; 3,684 for being under the standard of chest measurement; and 1,007 for being under weight. This by no means exhausts the list, but it is sufficient to show what terrible wastage is caused by the lack of the care and attention that such cases require, for it is safe to conclude that a very large number of them could have been cured, or very much improved, by proper medical treatment in the early stages of their development.

We hold, therefore, that it is the duty of the State to take such measures as may be necessary to safeguard the health of the rising generation, and to ensure, as far as possible, its physical and moral well-being. But the bargain should not be an entirely one-sided one. In return for all that the State gives now, or may give in future, some payment should be exacted, and this should take the form of personal military service, on the lines we have already suggested. The military training of the youth of the nation would be given as part and parcel of the ordinary school curriculum, and on leaving school every lad would be expected to enter one or other of the various branches of His Majesty's Service, for a definite period.

XV.—HOW THE SCHEME WOULD WORK.

Taking the number of youths attaining an age suitable for military service at 380,000 per annum, and deducting 50 per cent for those physically unfit or entering the Navy, there remains a balance of 190,000.

As the First Army is entirely recruited from the Second Army all the above would be available for the Second and Third Armies.

We have shown that to feed the Second Army, on the lines proposed, would require 100,000 recruits per annum; and that the Third Army would need 50,000 recruits, a total of 150,000.

The recruiting returns for 1904 show that 46,642 men entered the Army, and 35,264 the Militia, so it would, perhaps, be legitimate to assume that some 75,000 men per annum would voluntarily enter the Second Army. This would leave 25,000 men to be allotted *i.e.*, and assuming that the 50,000 men required for the Third Army had also volunteered, there would remain 65,000 youths liable for the ballot.

It might, of course, be possible that men would not come forward readily for the Third Army in which case it would be necessary to increase the strength of the Second Army in proportion to the decrease in that of the Third Army.

On the other hand, the applicants for the Third Army might be greater than its requirements, in which case it might be well to increase its establishment, since one of the points to be aimed at is to train as many men as possible for military service, and this Army affords the cheapest way of doing so. In any case sufficient men must be left to fill the ranks of the Second Army as that is the most important factor in the whole scheme.

It will be seen that if the Second and Third Armies are fixed at the strength proposed, some 40,000 youths per annum (out of those physically fit to serve) will escape all military service, and this number will tend to increase with the growth of population, and we hope with the diminution of the percentage of those unfit to serve.

It would then become a question whether it would not be advisable to increase one or both of these Armies so as to include as many as possible of those left out though for some time to come it would probably be wiser to let them alone, trusting to time and experience to teach the nation that it would be to its advantage to make every able-bodied man take his fair share in the defence of his country. By that time the system of military training in which I might be in final working order, and then it would be possible to reduce the period of service with the Colours in the Second Army to one year, and take for it the whole of the boys fit to serve attaining the age of military service, except those required to meet the wants of the Third Army. One would be possible in order to meet the views of those who object to having their boys sent to the colours of their boys so to arrange matters that their service should be so extensive during their military training that it should be an experience which is partly for the purpose of training them in the duties of an army, and partly for the purpose of training them in the duties of a soldier. In fact, the system proposed is so simple that it would be an easy matter to adjust its working parts to render the duty of military

service as little irksome as possible for the lads, and as little objectionable as possible for their relations. Once secure, the acceptance of the principle that every lad should be trained to serve and be liable to be called to arms when required, the actual conditions of service could be modified so as to suit the convenience of all classes.

XVI.—SUMMARY.

The proposals put forward may be briefly summarized as follows :—

1. To organize our military forces into three separate Armies, corresponding roughly to those already existing under the titles of Regular Army, Militia and Yeomanry, and Volunteers.

2. To make each of these Armies a complete and self-sufficient unit, ready to take the field independently.

3. The *First Army* to consist of 200,000 men, and to be responsible for the garrisons abroad, and for the conduct of small wars. Service to be purely voluntary and every man to serve for pension.

4. The *Second Army* to consist of 200,000 men, with large reserves, and to be responsible for the conduct of great wars in conjunction with the First Army. Service to be preferably for two years with the Colours and eight in the Reserve, but terms of service to be subject to modification as necessary. The Ballot to be enforced to give the numbers required.

5. The *Third Army* to consist of 250,000 men, with reserves; to be responsible for the defence of the United Kingdom in the event of the other Armies being sent abroad; and to be available to support those Armies if necessary. Service to be for five years with the Colours, and five with the Reserve.

6. The numbers obtainable in this way are estimated at :—

			Peace.	War.
1st Army	...	...	200,000	200,000
2nd Army	...	...	200,000	700,000
3rd Army	...	...	250,000	400,000
Total	...	...	650,000	1,350,000

and may be compared with our existing strength as shown by the Army Estimates for 1905-06 to be :—

			Peace.	War.
Regular Forces (including India)...			284,311	361,716
Militia and Yeomanry	...	...	128,194	135,493
Volunteers	...	...	245,359	245,359
Total	...	...	657,864	742,568

7. It is estimated that the cost of the above proposals would be less than that entailed under the present system, for the number of

men with the Colours are less, the men in the Second Army are to be paid less than those in the present Regular Army, and the cost of the Reserves would be reduced. On the other hand, pensions and extra pay for longer service would increase the average cost per man of the First Army. Still, even taking the actual cost to be the same, we get for our money some 1,350,000 trained men on a war footing as against 742,568, many of whom are neither fit nor liable for service abroad.

8. All boys to be put through a course of military training at schools, and to be taught to regard service in one or other of the military forces of their country as both their privilege and their manifest duty.

9. Boys so trained to serve for one instead of two years with the colours, or an even less period, if necessary.

10. All boys on attaining the age suitable for military service, if not in the Navy, or volunteering for the Third Army, to be liable to the Ballot for the Second Army.

11. The number of those admitted to the Third Army to be limited to the extent necessary to leave sufficient recruits for the Second Army.

12. In the event of there being an insufficiency of candidates for the Third Army, the strength of the Second Army to be increased to the extent necessary to ensure that the bulk of the youth of the nation should receive a military training.

XVII. CONCLUSION

In putting forward the above proposals we have been actuated by a desire not only to obtain the services of the able-bodied youths of the nation for our various military forces, but to ensure that these services may be made use of to the greatest possible advantage. To secure this it was necessary to suggest certain modifications in the constitution and terms of service of the component parts of our present military machine, in order to make it more suitable for its duties in peace and war.

Under the scheme proposed, the duties of the three Armies are clearly defined, and each has allotted to it its own definite sphere of action. The conditions that must govern the military organization of the British Empire are so complicated and so varied, that we cannot hope, as Continental Powers do, to create a single homogeneous force capable of carrying out all the duties laid upon it. Moreover, we wished to avoid suggesting universal service and had therefore to endeavour to make the conditions of service as little irksome as possible to the many, and as attractive as possible to the few. Returns spread over a series of years show that the number of men anxious to enter a military profession is a fairly constant factor, even that a fairly constant supply of recruits is forthcoming for service in the Machine Gun Companies and the Artillery. The military spirit, therefore, even if it has not been seriously affected by the changes that have been introduced into these forces in the past, and we may hope

therefore, that the same spirit will survive any changes that may be made in the future, and that, consequently, we may always reckon on a considerable number of volunteers for military service in its various forms. It is equally certain, however, that this supply will fall short of our needs, and that a large number of men will always seek to evade the duty they owe their country. Fortunately, however, our laws are so framed as to enable the necessary pressure to be brought to bear, and we were able, therefore, to suggest the application of the Ballot Act to the Second Army, in order to ensure an ample supply of recruits for that force. This suggestion will, no doubt, excite considerable opposition. We shall be told that it is un-English; that it will interfere with the trade of the country; that it will create a spirit of militarism; and so forth. Without the Ballot, however, it is difficult to see how the able-bodied youth of the nation is to be got into the ranks, and be given that military training that is so necessary for it. The training might certainly be given at school, but if the country retains no lien on the services of youths so trained, we shall not be much better off than we are at present in providing for the expansion of our forces in time of war. Failing the Ballot, we might try persuasion, the force of better methods of education, the offer of such pecuniary advantages as would compete with the labour market (a very costly experiment), remission of taxation (which would hardly affect the many), or the refusal of a vote to those who did not serve (a threat that would be laughed to scorn by the very people we want to catch). Such methods, however, are not worthy of serious consideration; to state them is to condemn them.

On the other hand, the action of the Ballot would be certain. It would, unquestionably, give us the number of men we require, and if applied, as suggested in the previous pages, its incidence would be almost imperceptible, for, as we have shown, out of 380,000 lads attaining the age of military service each year, only some 25,000, or about six and a half per cent would be affected by it, though doubtless many would seek to join the Third Army in order to avoid its incidence.

The question for the Nation to decide is whether it is going to accept this modicum of compulsion, or whether it is content to possess an Army that is proclaimed by our highest military authorities to be absolutely unfit for the duties it may any day be called on to carry out. The British Empire has not been built up without sacrifice. It is the work of men who have freely given their lives to the service of their country. To maintain their glorious heritage intact, the British people must be prepared to sacrifice some of their ease, some of their comforts, some of their personal liberty. The spirit of sacrifice is by no means dead,—the response to the call to arms at the time of the war in South Africa showed that,—but, unfortunately, the spirit that prepares for victory, that organizes success, has been allowed to wane, and our young men are turned out into the world without any ideals beyond those of personal

convenience and personal advantage. Let us teach them to place the country first, the individual second. Let us impress upon them that it is not sufficient to be ready to serve the country when the occasion arrives, but that they must learn to do so efficiently before it arises. We have, hitherto, been spared the terrible lessons which have brought home to other peoples the vital necessity of training the nation to arms, but unless we profit by their experience the day will surely come when we shall see the fabric of our Empire melt away, because we were too careless to take in time the necessary measures to defend it. We have had our warning; we have now the opportunity to profit by it, and to prepare for the inevitable struggle of the future. This we can best do by creating a truly national army, by training to arms the able-bodied youth of the nation, and by educating public opinion to understand that this is no question of party politics, no striving after a spirit of militarism, but a matter of life and death for, from a national point of view, we have now arrived at a period of our existence when it is necessary "Aut agere, aut mori."

EYLAU AND FRIEDLAND.

BY MAJOR J. FITZGERALD LEE, V.D., 1ST PUNJAB RIFLES.

“C’était Eylau—l’abominable Eylau—la plus sanglante, la boucherie entassant les corps hideusement défigurés—Eylau rouge de sang sous sa tempête de neige, avec son morne et héroïque cimetière—Eylau encore tout retentissant de sa foudroyante charge des quatre-vingts escadrons de Murat, qui traversèrent de part en part l’armée russe.....C’était Friedland, le grand piège effrayable où les Russes de nouveau vinrent tomber comme une bande de moineaux étourdis, le chef-d’œuvre de stratégie de l’empereur qui savait tout et pouvait tout.”—Zola. La Débâcle.

I.

The combined forces of Austria and Russia were shattered on the field of Austerlitz, on the 2nd of December 1805; and the armed hosts of Prussia were crushed at Jena on the 14th of October 1806.

In the history of war there is no defeat more complete in itself, nor more disastrous for the conquered in its immediate results, than that inflicted on Prussia by the Emperor Napoleon at the battle of Jena-Auerstadt. It was far more than the victory of one army over another; it was the victory of one nation over another; the victory of a new system and a new order of things military over a pedantic, worn-out, and hide-bound system of war. It also marks the highest point in the wonderful meteoric career of the greatest master of the Science and Art of War, “the most subtle, inventive, and audacious leader the world ever saw.”*

The pursuit which followed Jena-Auerstadt has never been equalled either before or since. It flatters the vanity and satisfies the revengeful feelings of the Germans to glorify the pursuit which followed Waterloo; but the chase from Mount St. Jean to the banks of the Sambre cannot be compared for a moment to the hurricane which swept from the Thuringian forest to the banks of the Oder and the shores of the Baltic Sea. There is only one other pursuit in the history of war which might be compared with that of Jena; it is when the Turks in the fourteenth century swept up to the walls of Vienna after the battle which their writers call the “Destruction of Mohacs.” But Jena will remain for ever a model and a masterpiece of what a victorious general should do after a battle.

* From *Hanley*.

XII.—THE EXPANSION OF OUR FORCES IN TIME OF WAR.

Finally, it remains to be considered how far the system proposed will lend itself to the expansion of our Forces in time of War.

The basis of the system is, as has been pointed out before, to keep as few men as possible with the Colours, in order to build up a really large reserve.

The First Army.

It is true that no reserve has been proposed for the First Army, since it was considered advisable to make that a long-service force always ready for service abroad, but on the mobilisation of the Second Army it would always be possible to utilise a portion of it to relieve the garrisons furnished by the First Army, so as to set them free for employment in the Field Army. Thus in the event of a war for the defence of India, it would be natural to employ in the first line the seasoned troops of the First Army, forming the garrison of our great Dependency, and replace them by the less highly-trained units of the Second Army. And, similarly, the garrisons of other places could be relieved by the Second Army, so that, provided we held the command of the sea, in due course the bulk of the First Army would be available to take the field.

The Second Army.

In the case of the Second Army, however, large reserves have been provided for, and these would be called out as soon as war became imminent. The number of Reservists called out would, of course, depend on the circumstances of the case, and the younger men would, naturally, be called out first. The total strength of the Second Army when fully mobilised would depend on the strength at which the active force had been fixed, and on the period of reserve service that had been imposed. We assumed, when dealing with the constitution of the Second Army, that the active force would be 200,000 men, serving for two years, with eight years' service in the Reserve, and calculated that this would produce a Field Army of 700,000 men, available to take its place at the seat of war alongside the First Army. Should an even greater expansion be deemed necessary, this could be done either by increasing the number of men serving with the Colours, or by increasing the period of service in the Reserve.

It would also be possible to form a second class of the Reserve consisting of men between, say, thirty and forty years of age, who would only be liable to be called out when the first class of the Reserve had been mobilised, and would then be available for garrison duty at Home or abroad.

In fact, the Second Army, thanks to the application of the Ballot, would be a most elastic force, and could be counted on to give us practically any numbers we might require.

The Third Army.

It would only be a very desperate struggle that could call for the mobilisation of the Third Army, for under all ordinary conditions

the First and Second Armies should prove ample for all our requirements.

In the event of the necessity arising, however, the mobilisation of the Third Army would take place on the same lines as that of the Second Army, such reservists as were necessary to complete units to strength being called out.

The total strength that could be mustered would depend chiefly on the period of reserve service fixed for the Third Army, but, in any case, the active strength of 250,000 men we have assumed, would provide a force amply sufficient to undertake the defence of the United Kingdom; for the absence abroad of our First and Second Armies would ensure that a very large portion of the enemy's troops were occupied by them, while it would also imply that we held command of the sea.

Supposing, however, that we had lost this by some unforeseen combination of circumstances, and that a serious invasion was really threatened, we should be able to put into the field the total strength of the Third Army, which, with all its reserves, should amount to, let us say, between three and four hundred thousand men, while the pensioners of the First Army and the men who had completed their service in the reserve of the Second and Third Armies would provide another large contingent, all trained to the use of arms.

Humanly speaking, invasion under such conditions would be practically impossible, even should an opportunity for it occur, and we consider it as far more likely that a portion of the Third Army would be permitted to volunteer to serve abroad in support of the First and Second Armies than that it would be actually employed in defending the shores of this country.

XIII.—VALUE OF THESE FORCES.

We see, therefore, that the method of securing the services of the able-bodied youth of the nation submitted in the previous pages, lends itself to a very ready and efficient expansion of our military forces in time of war; that, in fact, it enables us, like the Continental Powers, to assemble the Nation in arms, and to deploy our strength in any direction, and to any extent, that may be deemed necessary. As to the relative value of our military forces and those of any possible adversary, we should start with the initial advantage of possessing a considerable long-service army, always mobilised and ready for instant action, highly trained, inured to the vicissitudes and hardships of foreign service, and, thanks to our constant small wars, experienced in campaigning.

Our Second Army would, possibly, be somewhat inferior in training to the enemy's picked troops, but, taken as a whole, we believe that it would, at the commencement of a campaign, be quite equal to the bulk of the troops it would have to meet, while, after a few months' experience, in the field, we believe that it would be considerably better. Much would, however, depend on the period of service that was exacted, for the more this is reduced the

less efficient must be the training that can be given, for we cannot hope in a few months to produce the same results that it takes other nations years to attain.

Our Third Army would, naturally, be inferior in training to foreign troops, but as it would not be likely to be required for active use for a considerable time after the opening of a campaign there would be ample opportunity for remedying its defects and for increasing its efficiency.

We have seen what the manhood of the nation is capable of, even when untrained and inexperienced. Given the training and experience it lacked in South Africa, we feel confident that it would prove equal to any task that might be imposed upon it, and we feel equally assured that if our military authorities are given the material to work on, they will soon fashion a machine for war that will answer all requirements and ensure the safety, honour, and welfare of His Majesty's dominions. Hitherto, our military organization has proved a failure, because those responsible for it were called on to make bricks without straw, to create an army without men, a national force without national support. The fatal results of that divorce between the Army and the Nation have been indelibly written on the pages of our military history, and that they have not been written large on our national history as well, is due to the fact that our Navy has always stood in the breach, and that we have had the most extraordinary good fortune in escaping the logical consequences of our mistakes. Let us beware, however, how we tempt fortune too far, and, ere it is too late, let us, as a nation, revert to the old ideal that every citizen is in duty bound to learn the use of arms, and be prepared to wield them, if necessary, in defence of all that is dear to him.

XIV.—THE YOUTH OF THE NATION.

We may assume, roughly, that the number of youths attaining an age suitable for military service is about 380,000 per annum.

Of this number a certain proportion passes into the Navy, while a very serious percentage is physically unfit for military service. According to the Army Medical Department Report for the year 1903, the percentage of rejections in the case of recruits actually examined by the Medical Officers was no less than 32, while adding those found unfit within three months of enlistment, the percentage of unfit amounted to 33·6. If we add to this the number of men rejected by the recruiting staff without any medical examination, and allow for men so weak and puny that they could not hope to be accepted for service in the Army, it is probable that the total numbers of those medically unfit to serve would amount to something like 50 per cent of the youth of the nation. That this shows a most serious state of affairs, not only from a purely military standpoint, but from the point of view of the physical well-being of the nation, is beyond question, and the country ought to welcome any means by which this terrible physical deterioration could be checked. The

evil is doubtless due, in a very large measure, to such preventible causes as bad feeding, insufficient clothing, insanitary dwellings and the crowded life of our great cities, causes that tend to accentuate existing maladies and to induce new ones. It would not, of course, be feasible to entirely remove all these causes, but much might be done to mitigate them by the careful periodical medical examination of all school children, with a view to take their various ailments in hand in time; by the provision of wholesome food and suitable clothing to such children as require them owing to the poverty of their parents; by the introduction of regular physical exercises into all schools; and by a proper system of military training for all boys above a certain age and of suitable physique. It may be objected that all this would cause enormous expense and cast an increased burden on the taxpayer. Undoubtedly it would, but as the country has accepted the principle of compulsory education it should see to it that that education includes all the elements necessary to turn out good and useful citizens, capable of taking their due share in the government and in the defence of their country. It is of little use to feed the mind and starve the body. To turn out citizens mentally sound, but physically unfit, is just as bad as to leave them steeped in ignorance; and to make no effort to improve our stock is as criminal as it is short-sighted.

According to the Army Medical Department Report for 1903, in that year no fewer than 4,400 recruits were rejected for the loss or decay of many teeth; 2,535 were rejected for defective vision; 3,684 for being under the standard of chest measurement; and 1,007 for being under weight. This by no means exhausts the list, but it is sufficient to show what terrible wastage is caused by the lack of the care and attention that such cases require, for it is safe to conclude that a very large number of them could have been cured, or very much improved, by proper medical treatment in the early stages of their development.

We hold, therefore, that it is the duty of the State to take such measures as may be necessary to safeguard the health of the rising generation, and to ensure, as far as possible, its physical and moral well-being. But the bargain should not be an entirely one-sided one. In return for all that the State gives now, or may give in future, some payment should be exacted, and this should take the form of personal military service, on the lines we have already suggested. The military training of the youth of the nation would be given as part and parcel of the ordinary school curriculum, and on leaving school every lad would be expected to enter one or other of the various branches of His Majesty's Service, for a definite period.

XV.—HOW THE SCHEME WOULD WORK.

Taking the number of youths attaining an age suitable for military service at 380,000 per annum, and deducting 50 per cent for those physically unfit or entering the Navy, there remains a balance of 190,000.

As the First army is entirely recruited from the Second Army all the above would be available for the Second and Third Armies.

We have shown that to feed the Second Army, on the lines proposed, would require 100,000 recruits per annum ; and that the Third Army would need 50,000 recruits ; a total of 150,000.

The recruiting returns for 1904 show that 46,642 men entered the Army, and 35,264 the Militia, so it would, perhaps, be legitimate to assume that some 75,000 men per annum would voluntarily enter the Second Army. This would leave 25,000 men to be ballotted for, and, assuming that the 50,000 men required for the Third Army had also volunteered, there would remain 65,000 youths liable for the ballot.

It might, of course, be possible that men would not come forward readily for the Third Army, in which case it would be necessary to increase the strength of the Second Army in proportion to the decrease in that of the Third Army.

On the other hand, the applicants for the Third Army might be greater than its requirements, in which case it might be well to increase its establishment, since one of the points to be aimed at is to train as many men as possible for military service, and this Army affords the cheapest way of doing so. In any case, sufficient men must be left to fill the ranks of the Second Army as that is the most important factor in the whole scheme.

It will be seen that if the Second and Third Armies are fixed at the strength proposed, some 40,000 youths per annum (out of those physically fit to serve) will escape all military service, and this number will tend to increase with the growth of population, and, we hope, with the diminution of the percentage of those unfit to serve.

It would then become a question whether it would not be advisable to increase one or both of these Armies so as to include as many as possible of those left out, though for some time to come it would probably be wiser to let them alone, trusting to time and experience to teach the nation that it would be to its advantage to make every able-bodied man take his fair share in the defence of his country. By that time the system of military training in schools might be in full working order, and then it would be possible to reduce the period of service with the Colours in the Second Army to one year, and take for it the whole of the boys fit to serve attaining the age of military service, except those required to meet the wants of the Third Army. Or it would be possible, in order to meet the views of those who object to barrack life as harmful to the morals of their boys, so to arrange matters that their sons could live at home while undergoing their military training. This, though an innovation, would be perfectly feasible, the boys coming to their daily duties like any other workmen, and putting in their term of night duty as required. In fact, the system proposed would be so elastic that it would be an easy matter to adjust its working so as to render the duty of military

service as little irksome as possible for the lads, and as little objectionable as possible for their relations. Once secure, the acceptance of the principle that every lad should be trained to serve and be liable to be called to arms when required, the actual conditions of service could be modified so as to suit the convenience of all classes.

XVI.—SUMMARY.

The proposals put forward may be briefly summarized as follows:—

1. To organize our military forces into three separate Armies, corresponding roughly to those already existing under the titles of Regular Army, Militia and Yeomanry, and Volunteers.

2. To make each of these Armies a complete and self-sufficient unit, ready to take the field independently.

3. The *First Army* to consist of 200,000 men, and to be responsible for the garrisons abroad, and for the conduct of small wars. Service to be purely voluntary and every man to serve for pension.

4. The *Second Army* to consist of 200,000 men, with large reserves, and to be responsible for the conduct of great wars in conjunction with the First Army. Service to be preferably for two years with the Colours and eight in the Reserve, but terms of service to be subject to modification as necessary. The Ballot to be enforced to give the numbers required.

5. The *Third Army* to consist of 250,000 men, with reserves; to be responsible for the defence of the United Kingdom in the event of the other Armies being sent abroad; and to be available to support those Armies if necessary. Service to be for five years with the Colours, and five with the Reserve.

6. The numbers obtainable in this way are estimated at:—

		Peace.	War.
1st Army	...	200,000	200,000
2nd Army	...	200,000	700,000
3rd Army	...	250,000	400,000
Total	...	650,000	1,350,000

and may be compared with our existing strength as shown by the Army Estimates for 1905-06 to be:—

		Peace.	War.
Regular Forces (including India)...		284,311	361,716
Militia and Yeomanry	...	128,194	135,493
Volunteers	...	245,359	245,359
Total	...	657,864	742,568

7. It is estimated that the cost of the above proposals would be less than that entailed under the present system, for the number of

men with the Colours are less, the men in the Second Army are to be paid less than those in the present Regular Army, and the cost of the Reserves would be reduced. On the other hand, pensions and extra pay for longer service would increase the average cost per man of the First Army. Still, even taking the actual cost to be the same, we get for our money some 1,350,000 trained men on a war footing, as against 742,568, many of whom are neither fit nor liable for service abroad.

8. All boys to be put through a course of military training at schools, and to be taught to regard service in one or other of the military forces of their country as both their privilege and their manifest duty.

9. Boys so trained to serve for one instead of two years with the colours, or an even less period, if necessary.

10. All boys on attaining the age suitable for military service, if not in the Navy, or volunteering for the Third Army, to be liable to the Ballot for the Second Army.

11. The number of those admitted to the Third Army to be limited to the extent necessary to leave sufficient recruits for the Second Army.

12. In the event of there being an insufficiency of candidates for the Third Army, the strength of the Second Army to be increased to the extent necessary to ensure that the bulk of the youth of the nation should receive a military training.

XVII.—CONCLUSION

In putting forward the above proposals we have been actuated by a desire not only to obtain the services of the able-bodied youths of the nation for our various military forces, but to ensure that their services may be made use of to the greatest possible advantage. To secure this it was necessary to suggest certain modifications in the constitution and terms of service of the component parts of our present military machine, in order to make it more suitable for its duties in peace and war.

Under the scheme proposed, the duties of the three Armies are clearly defined, and each has allotted to it its own definite sphere of action. The conditions that must govern the military organization of the British Empire are so complicated and so varied that we cannot hope, as Continental Powers do, to create a single homogeneous force capable of carrying out all the duties falling to it. Moreover, we wished to avoid suggesting universal service, and had, therefore, to endeavour to make the conditions of service as little irksome as possible to the many, and as attractive as possible to the few. Returns spread over a series of years, show that the number of men anxious to embrace a military life is a fairly constant factor; also that a fairly constant supply of recruits is forthcoming for service in the Militia, the Yeomanry, and the Volunteers. The military spirit thus evinced, has not been seriously affected by the changes that have been introduced into these forces in the past, and we may hope,

therefore, that the same spirit will survive any changes that may be made in the future, and that, consequently, we may always reckon on a considerable number of volunteers for military service in its various forms. It is equally certain, however, that this supply will fall short of our needs, and that a large number of men will always seek to evade the duty they owe their country. Fortunately, however, our laws are so framed as to enable the necessary pressure to be brought to bear, and we were able, therefore, to suggest the application of the Ballot Act to the Second Army, in order to ensure an ample supply of recruits for that force. This suggestion will, no doubt, excite considerable opposition. We shall be told that it is un-English ; that it will interfere with the trade of the country ; that it will create a spirit of militarism ; and so forth. Without the Ballot, however, it is difficult to see how the able-bodied youth of the nation is to be got into the ranks, and be given that military training that is so necessary for it. The training might certainly be given at school, but if the country retains no lien on the services of youths so trained, we shall not be much better off than we are at present in providing for the expansion of our forces in time of war. Failing the Ballot, we might try persuasion, the force of better methods of education, the offer of such pecuniary advantages as would compete with the labour market (a very costly experiment), remission of taxation (which would hardly affect the many), or the refusal of a vote to those who did not serve (a threat that would be laughed to scorn by the very people we want to catch). Such methods, however, are not worthy of serious consideration ; to state them is to condemn them.

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In the history of war there is no defeat more complete in itself, nor more disastrous for the conquered in its immediate results, than that inflicted on Prussia by the Emperor Napoleon at the battle of Jena-Auerstadt. It was far more than the victory of one army over another ; it was the victory of one nation over another ; the victory of a new system and a new order of things military over a pedantic, worn-out, and hide-bound system of war. It also marks the highest point in the wonderful meteoric career of the greatest master of the Science and Art of War, "the most subtle, inventive, and audacious leader the world ever saw."*

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In the century which has elapsed since then the conditions of war have been so changed that such a pursuit is now impossible, unless the contending forces are very unequal in number; for the losses which even the victors are bound to sustain prevent an effective pursuit. In the campaign of 1870, Woerth and Spicheren are examples of this; and in the Russo-Japanese War there was no effective pursuit after Kinchow, Telissu, Tashichao, or Liao-yang. Indeed in modern times, the palm in this respect must be given to the British Army after the battle of Tel-el-Kebir.

Within one week after the battle of Jena-Auerstadt the Corps of Bernadotte, Soult, Ney, Lannes, Augereau, Davout, and the Imperial Guard were spread out on a huge arc heading for the shores of the Baltic and the line of the Oder. In less than a fortnight the French eagles were in the streets of the Prussian capital. Hohenlohe with the relics of his once mighty army had surrendered at Prenzlau; Blücher, after making a few desperate but very weak attempts at fighting a rear guard action, surrendered to Murat, at Ratkau, on the 7th of November. Ney captured the strong fortress of Magdeburg next day; Spandau and Kustrin fell; so that by the middle of November the Prussian King was no longer master of a square foot of ground except a few barren, marshy patches between the Vistula and the Niemen, including what was left of the province of East Prussia, and its capital, the ancient and royal city of Königsberg.

But Napoleon did not consider his task by any means finished with the overthrow of the Prussian monarchy. He still had to reckon with the other powers of the Coalition which had been formed against him. These were England, Russia, and Sweden. Of these, Russia was by far the most formidable, and with her he had not as yet measured swords. She had certainly tried to stand against him, the year before, on the fatal field of Austerlitz. But on that occasion she only formed part of an Allied Army in which she did not put forth all her strength. No Russian Army had been beaten by Napoleon nor by any European Army; even the great Frederic himself, some forty years before this time, had to flee with the shattered remnants of his forces before the victorious Muscovite from the bloody field of Kunersdorf.

The two other members of the Coalition, Sweden and England, played only minor parts on the Theatre of War. Sweden was a poor country with a small population and a small army. England was wealthy, and had command of the sea; but any armed force which she could put into the field would be so small that it could not have much influence on the result of the campaign; besides, such a force was not to be expected till the following spring.

In the meantime Napoleon did all in his power to prevent England from taking an active part against him. After the destruction of his fleet at Trafalgar he had to give up all thought of meeting her on sea. England passed an Order in Council declaring the whole coast of France to be in a state of blockade. To this

Napoleon replied by issuing his famous "Berlin Decree," by which all English goods were prohibited to be sold in the European countries which owed allegiance to him or his allies. He thought this would have the effect of stopping all intercourse between England and the Continent. But he was disappointed; the main result of his "Decree" was to encourage smuggling; and his effort to check the development of English commerce by land was as ineffectual as the English attempt to destroy French trade by sea was successful.

Having conquered all Northern Europe except Sweden and Russia, and taken Berlin, the Emperor now made up his mind to paralyse the power of the Prussian King by depriving him of those resources on which he would have been able to draw during the winter, from the country between the Oder and the Vistula; he also resolved on the capture of Königsberg, the last refuge of the Royal House of Hohenzollern.

It is not certain that the Czar Alexander had even now any particular wish to fight against Napoleon; but he found the French armies too inconveniently near to his state; he knew that the French Emperor was coquetting with Poland and openly hinting at the re-establishment of an independent Polish Kingdom; and Prussia had appealed to him to obtain favourable terms of peace. The terms offered by Napoleon to the King of Prussia affected Russia to a considerable extent; indeed they were such, and were intended to be such, as the King could not accept without giving offence to Russia. He was to order all Russian troops out of his territories, and to withdraw his own army behind the Vistula. This meant that a French Army could be placed in Poland long before a Russian army could get there, and that the French would hold the Vistula, Russia's first line of defence. It would be too much to expect that Alexander should allow this as long as he was in a position to prevent it; and when, on the 27th of November, the King of Prussia refused the terms, Russia stepped forward and threw her sword into the scale.

II.

In the campaign now about to begin we have on the one side France, Italy, and the Confederation of the Rhine, with altogether a population of 40 millions and an annual income of about 800 million francs. To this must be added another 100 million francs from Prussia, for the Budget, and again the same sum squeezed out of this already impoverished country, as a contribution to the war. We may also place on the side of Napoleon the Ottoman Empire; because Russia, by ill-timed interference with regard to the banished Hospodars of Moldavia and Wallachia, irritated the Sultan so that he declared war against her; and Alexander was compelled to weaken his main army by 60,000 men, which, under the command of General Michelson, he sent across the Dniester.

On the other side we have Prussia, now reduced to one small province, and an army scarcely worthy of the name, consisting of

only 25,000 men; Russia, with a population of 40 millions and an army of 400,000 men; England, mistress of the seas, but, then as now, with an army too small to be of any weight in a campaign on land; and Sweden, who was content to fish in the troubled waters but who did not forget to draw a subsidy from England while doing so.

It will be of some interest to take a glance at the political element which played an important part in this campaign. The offensive lay with Napoleon; and here as well as in all his great campaigns, he was not slow to take advantage of it. He could have moved against Russia either by North Germany, or by Middle Germany, the latter being his shortest and easiest route. An advance through North Germany would leave his right flank exposed to hostile attack from those who, though not professing open enmity towards him, were still ready to turn to their advantage any mistakes he might make or any defeat he might suffer. An advance through Middle Germany, that is, by Saxony and Southern Silesia, would have the effect of turning Saxony against him; this he did not wish, and he could not afford it under the present circumstances. Saxony had no reason to love him; but Saxony's next door neighbour, Austria, hated him with all the hatred of a haughty and aristocratic race for a conquering horde of democrats headed by an adventurer and an upstart. Austria was for him the unknown quantity in the problem he had set himself to solve. He never trusted Austria, and she never deserved his trust. Unprincipled as he was in his dealings with nations and peoples, Austria was far more so. Yet at the present moment he saw that it would not suit him to offend Austria; so he tried to conciliate her by offering to restore to her the old province of Silesia of which she had been so shamefully robbed by Frederic the Great. But while dangling this bait before the greedy eyes of Austria he took other measures to keep her quiet. He had a considerable army in Northern Italy, which, in case of need, he could increase to a strength of 60,000; and one of his ablest generals, Marmont, was in Dalmatia at the head of a smaller force. If Austria began to give trouble in the north these forces were to make themselves felt in the south, and employ an Austrian Army of about 100,000 men.

Napoleon then gratified the vanity of the Elector of Saxony by making him a King and admitting his state to the Rhine Confederation, of which Saxony remained a loyal member until the battle of Leipzig (Oct. 1813), where, however, the Saxon troops established a record in perfidy and treachery, marching out to battle-side by side with the French as allies, and then turning round and shooting them down point blank.

Having secured his right flank the Emperor settled that his line of operations was to go through North Germany. His main lines of communication with France went through Mayence, Würzburg, Erfurt, Wittenburg, and Spandau; and in order to secure them effectually he placed in Hanover the 8th Corps, under Marshal

Mortier, whose duty it was also to guard the Lower Elbe and the Weser. He organised what he called "Corps of Observation" for the northern seaboard of France and Holland; though there was but little fear of any attack on these shores. The woeful experience of 1799 had taught England a lesson which she did not forget until she was tempted to send an expedition to Walcheren in 1809.

Secure on both flanks the Emperor could now devote all his attention to the hostile armies in front of him.

III.

To draw a rough sketch map of the Theatre of Operations the following hints may be found useful:—

Draw a line six inches long, making an angle of 10° with the vertical. At the upper end of this line place Königsberg, and at its lower end the battlefield of Pultusk. This line will represent a distance of 100 miles. Draw another line of the same length, on the left of this, from Königsberg, and making an angle of 50° with the former line. At the lower end of this line place Thorn. Thirty miles south of Pultusk is Warsaw, and its suburb on the eastern bank of the Vistula, Praga. Going down the right hand line 20 miles from Königsberg we come to the battlefield of Eylau; and 75 miles direct west of Eylau is the important fortress and seaport, Danzig. From Warsaw to Thorn is 80 miles; and half way on a line connecting these two places is Plock, on the Vistula. Heilsberg is 15 miles south of Eylau; and the celebrated battlefield of Friedland is the same distance, east-by-north from Eylau. Golymin is 15 miles north-west of Pultusk, and Nasielsk is 15 miles south-west of the latter. Saalfeld is half way on the line joining Thorn and Königsberg.

The combined streams of the Bug and Naref fall into the Vistula 20 miles north-west of Warsaw, near a place called Modlin; and the Oukra, after a course of 60 miles, joins this united stream 5 miles north-east of Modlin.

At a distance of 40 miles from Thorn on the line to Königsberg we come to a road leading from Grandenz, on the Vistula, 10 miles west of this point, and going through a region of numerous small lakes and marshes up to Königsberg.

The principal river in the Theatre of Operations is the Vistula. It rises in a spur of the Carpathians called the Sudetic Range; it flows first to the east, past Cracow, then bends round to the north; turns north-west after Warsaw, and then west, to Thorn; after which it runs nearly north, and falls into the Baltic Sea on the east of Danzig.

The rivers Bug, Naref, and Oukra, in this order, from east to west, flow into the Vistula; the Oukra is the longest, and it rises north of Soldau.

The Drewenz flows into the Vistula about 12 miles east of Thorn, from the direction of the Osterode lakes. The principal places on it are Gollub, Strasburg, and Lebbau.

The Pregel flows from east to west, into the Frisches-Haff, near Königsberg. The river Alle, running up from the south, and passing Jonkowo, Guttstadt, Heilsberg, and Friedland flows into the Pregel at Wehlau. For about 30 miles of its course north of Jonkowo it flows nearly parallel to the Passarge, which, at Depper, is only 8 miles to the west of it, and which flows into the Frisches-Haff at Braunsberg, 30 miles south-west of Königsberg.

Ostrolenka is 30 miles north-east of Pultusk on the Naref where the Omulev falls into it from the north-west ; and stretching north from Ostrolenka for nearly 40 miles to the group of lakes is the Johannisburg Forest, celebrated in Polish legend as the dark abode of only devils and wolves.

In any country where military operations are carried out the state of the communications and the climate are important factors in the strategy of the campaign ; but in few cases have these factors influenced strategy to the extent which they did in the campaigns of Eylau and Friedland.

Describing the Theatre of Operations, a writer* says:—

“There was no metalled road in the country ; the best of the communications were mere banks of earth, not even revetted except where their passage across marshes rendered it impossible to maintain them without artificial support. By the droughts of summer or the frosts of winter these so-called roads were hardened to a consistency which allowed of the passage of artillery with as much ease as is ever possible where unmetalled roads have to be used. When soaked with rain, or dissolved by thaws, they became almost impassable.....In wet weather the slush attained a depth to be measured in feet, not in inches. In December 1806, the infantry sank to their knees in the soft road ; the horses to their hocks ; the guns to their axles ; sometimes even guns absolutely disappeared in the clayey mire. Double and quadruple teams could not drag them along as fast as the $1\frac{1}{4}$ miles an hour which the infantry with infinite labour could cover.”

In the Theatre of Operations the principal roads were:—

- (1) Danzig to Warsaw, by the right bank of the Vistula.
- (2) Danzig to Königsberg, by Elbing and Braunsberg.
- (3) Warsaw to Königsberg, by Sierock, Pultusk, Prasnitz, Bartenstein and Eylau.
- (4) Pultusk to Ostrolenka, and so on to St. Petersburg.
- (5) From Thorn: (a) along the north of the Vistula to Plock ; thence direct east to Nasielsk and Pultusk ; and (b) to the north-east, crossing the Drewenz at Gollub, then going east to Soldau, and joining on to the Warsaw-Königsberg road at Miawa.

At the beginning of the campaign Prussia still held the four fortresses of Danzig, Königsberg, Pillau (commanding the entrance to the Frisches-Haff) and Graudenz, which commanded the principal passage across the Lower Vistula.

* *Petre. Napoleon's Campaign in Poland*, p. 51.

IV.

The French Army, sometimes called the Grand Army, which was now about to try its strength in a struggle with Russia, was composed of the following Corps, stationed at the places mentioned, about the beginning of November 1806:—

First Corps:	Bernadotte,	18,000 ;	near Lübeck.
Third Corps:	Davout,	22,000 ;	at Küstrin.
Fourth Corps:	Soult,	20,000 ;	near Lübeck.
Fifth Corps:	Lannes,	16,000 ;	at Stettin.
Sixth Corps:	Ney,	20,000 ;	at Magdeburg.
Seventh Corps:	Augereau,	17,000 ;	at Berlin.
Imperial Guard, 8,000 ; at Berlin.			

The Cavalry Reserve, commanded by Murat, was nearly 10,000 strong, at Berlin. And another body of cavalry which was about to be put under the command of Bessieres, consisted of 8,000 men. The Emperor also formed in Silesia a 9th Corps, of about 15,000 men, which he placed under the command of Prince Jerome, whose business it was to reduce all the strong places in that province, and to protect the right rear of the invading army from a possible advance by Austria. As the campaign progressed, a 10th Corps was raised and given to Marshal Lefebvre, to carry out the siege of Danzig.

To oppose the Emperor in the field there was, first of all, General Lestocq, at the head of 22,000 men, in and about Thorn. Then there was the first Russian Army, 55,000 strong, under General Benningsen in and about Warsaw. This Army was organised in four Infantry Divisions, after the fashion of the French Armies during the early years to the Republic. Following Benningsen's Army at a distance of a few day's march was a second Russian Army, 40,000 strong, under General Buxhowden. This also consisted of four Infantry Divisions. Finally, there was a reserve of two or more Divisions, under General Essen, on the Nieruen.

The plan of campaign was a very simple one. Napoleon wished to seize and hold Königsberg, so he made this his principal objective. During the earlier part of the campaign he was uncertain as to whether the Russians would oppose him; but nothing would please him better than that they should do so, in which case he expected another Jena on the plains of Poland, which would be a death-blow to the Coalition.

Immediately before the opening of the campaign the following were the movements of the French troops:—

Davout from Küstrin to Posen.

Augereau from Berlin to Küstrin and Landsberg.

Lannes from Stettin to Stargard and Schneidmühl.

Murat to Posen; and Jerome to occupy Kalisch as a central position from which to act against the Silesian fortresses.*

* General Vandamme captured the two principal Silesian fortresses, Glogau and Breslau, on the 2nd of December 1803, and the 7th of January 1807, respectively.

For political as well as for military reasons Napoleon determined that the first thing for him to do was to occupy Warsaw. It would form a good *point d'appui* for his left; it commanded the principal passage across the Vistula and the roads which led direct into the heart of Russia, and its possession assured him an influence over the Poles as well as their support. So he quickly arranged for the advance of his Army to the line of the Vistula between Thorn and Warsaw. The movement of his Corps was to be by echelon, right in front. Davout and Murat were to lead; and after them, in the following order, Lannes, Augereau, Soult, Ney, and Bernadotte. In this way each Corps in its advance was protected from attack by the Corps coming after it, and the Vistula protected the left of the whole Army. Here it may be remarked that Napoleon was about to carry out the crossing of the Vistula as he advised General Moreau to cross the Rhine in 1800. When he had thus secured the line of the Vistula, his intention was to march against the Russian Army, if it had not fallen back, take advantage of the dispersion of its Corps and of the superiority of his own forces to wipe it out in detail. Then, being master of the country, his idea was to occupy all the important places, Königsberg first of all, and the principal strategic points, until the Czar should come to terms.

As they approached the Vistula, and when the Emperor got information that the whole Russian Army was concentrated somewhere beyond the river (where, he did not exactly know,) his Corps moved, roughly, in two huge bodies; the first consisting of the Corps of Davout, Augereau, and Lannes, with Murat in chief command; then the Corps of Soult, Ney, and Bernadotte, under the eye of the Emperor himself, though nominally commanded by Soult. Each force was nearly 80,000 strong.

In the end of November Napoleon arrived in Posen. And on

November 27. that day (27th) the vanguard of Murat's cavalry stumbled against the Russian cavalry at Blonye, 20 miles west of Warsaw, and put them to flight after a short skirmish. Now Davout was a day's march behind Murat; Lannes was at Lowicz, 12 miles west of Blonye; Augereau at Gostynin; Ney and the Guard at Posen.

Next day the Russians evacuated Warsaw, and Murat entered

November 28. it at the head of his cavalry, and was welcomed with great rejoicing by the Poles. Two days later Davout arrived.

Benningsen was kept well informed of Napoleon's movements; he feared that the Emperor would turn his left wing and bring on a second Jena. So he retired in haste from Praga, and withdrew his whole Army to the Naref. At the same time Lestocq, who commanded the Prussians, fell back to Stras-

December 1. burg, a small town on the Drewenz, north-east of Thorn.

During the first week of December, Murat and Davout crossed the Vistula at Warsaw, and pushed on towards the Bug. Then Lannes

arrived in Warsaw; Ney occupied Thorn, and pushed some of his troops, preceded by his light cavalry, out beyond this place, to the north-east and east.

In the meantime Benningsen was timid and wavering; he seems to have had no clear notion as to what he ought to do or how he ought to do it; but one thing he knew for certain—the victors of Austerlitz, Jena, and Auerstadt were coming to meet him, and they would prove to be rough play-fellows. He had fallen back on Ostrolenka; and when he had stayed there a few days, doing nothing, he ordered up Buxhowden to join him, moved down in the direction of Pultusk, and at the same time ordered Lestocq to advance on Thorn.

Soult's Corps, the 4th, had now crossed the Vistula, at Plock. Here a bridge was thrown across the river; and Augereau with the 7th Corps, followed Soult.

Napoleon had been for some days doubtful as to what the Russians were going to do, but at last he became certain that they were advancing to meet him. But even then he did not know from what quarter exactly to expect the attack, so he made the following arrangements.

The second Cavalry Reserve, which he had placed under the command of Bessieres, was to push out from Thorn to Rypin, 30 miles east-by-north across the Drewenz, in order to keep up communication between Ney and Soult, and, as far as possible, to reconnoitre the country north of the Vistula. He then ordered Davout to cross the Vistula at Novydvor, and Augereau at Sakrotchim. In this way he would have four

Corps moving northwards simultaneously, and in this order, from west to east:—Ney, Soult, Augereau, and Davout; moving on a front of about 120 miles.

His object in these movements may be easily perceived when they are followed out on the map. (In studying them it would be well to keep in mind that owing to the bad state of communications in the country and the difficulty of getting about, the reconnaissances could not be performed in anything like a satisfactory manner; the information took a long time in coming in to headquarters, so that when it came in it no longer represented a true state of affairs.) The Emperor could not tell whether the Russians were going to hold the line of the Naref or to get between him and Königsberg. But by his arrangements he had prepared for both eventualities. If the Russians remained at Pultusk, he could turn their right and cut them off not only from Königsberg but from their allies, the Prussians, by bringing up his left with the Corps of Bernadotte, Ney, and Soult. If they would not stand to fight at Pultusk there were only two other things they could do: (a) fall back on the frightfully inhospitable region of the lakes and the Johannesburg Forest, which meant for them starvation and death; or (b) carry out a flank march to Königsberg while being followed up by Murat, Lannes, Davout and Augereau.

This, then, was Napoleon's strategy up to and in the middle of December. It is marked by more caution and less boldness than he displayed in any other campaign; it is rather the crawl of the tiger than the spring of the lion.

On the 7th he had ordered Davout to cross the Naref, near its junction with the Oukra. Davout carried out this order with his usual promptness, and threw a bridge of boats across the river. All this time, but especially during a week in the middle of December, the weather was so very severe that it was impossible for either of the belligerents to carry out any operations worth speaking of. On the evening of the 13th, the Emperor, at Posen, received a despatch from Murat, dated midnight, December the 10th, to say that the Russian Army had retreated from the eastern bank of the Naref. Hereupon he sent back a message to Murat to follow up the retreating Russian with all his available forces, to cut them off from the road to Königsberg, and to drive them on to the bayonets of Ney and Soult advancing from the west.

But having sent off this order the Emperor was not quite satisfied; he suspected the news he had got from Murat; he thought it too good to be true; so he now acted on the advice he was so fond of giving to others, that is to verify for his own satisfaction the report he had received from his subordinate. Never before nor after did he display such energy as now. He started from Posen on the evening of the 16th. The thermometer was below zero; and the icy wind blew the sand so hard that the members of his staff had their faces cut and bleeding as if they had been scratched, and torn by needles. He arrived in Warsaw on the 19th; but only to find, to his astonish-

ment and disgust, that Murat's report with regard to the Russian Army was altogether inaccurate. Murat experienced at the hands of his brother-in-law a very bad quarter of an hour, as he afterwards confessed; but then the Emperor rose to the occasion, and issued the following fresh orders:—

Ney to move on Gollub (at the crossing of the Drewenz,) with his advanced guard at Rypin (12 miles east of Gollub), and his light cavalry on his left. Bernadotte to take Ney's place at Thorn. Soult to move northwards from Plock, in the direction of Biezun, but not to lose touch with Ney's right. Bessiere's light cavalry to push along the Oukra and keep in touch with the cavalry of Augereau. Lannes to move up the left bank of the Bug, and the Guard to take his place at Warsaw.

From Napoleon's correspondence and his subsequent remarks on this campaign we can gather that his first intention, after he had arrived on the Vistula, was to penetrate between the two forces opposed to him, to overwhelm the Prussians, and then turn against the more formidable forces of the Russians, and thus to repeat his gloriously successful strategy of 1796 when he penetrated between the Sardinians and the Austrians. Indeed, just as great novelists and dramatists, unconsciously, perhaps, repeat themselves in their novels and plays, so we find this great master of his art, Napoleon, from

Austerlitz to Waterloo, attempting to repeat the great stroke by which he won his first campaign. He always loved the principle of the wedge, and no man could hammer it home better.

After much wavering, and valuable time wasted in useless Councils of War, Benningsen came to the conclusion that the best thing he could do would be to stand on the defensive behind the line of the Naref. The other Russian Army, Buxhowden's, had got as far as Ostrolenka on the 19th ; so that now these two forces looked as if they might be trusted to hold this line, or at least to present a strong front to the invaders.

But suddenly everything was changed. The Commander-in-Chief of the Russian forces now came on the scene. General Kamenski was an ill-tempered, decrepit, ignorant and obstinate relic of the school of Suvaroff and the old régime. He was now in his 81st year.* The fact that Benningsen was standing on the defensive would have been quite enough by itself to make Kamenski assume the offensive; but in addition to this he had express orders from the Czar Alexander to attack at once, and not to stop until he had driven every live Frenchman across the Oder. He set about carrying out his orders at once. He pushed out a large body of troops to the Oukra ; moved Gallitrin out in support of the 3rd Division at Glubovo ; sent Sedmaratzki with the 6th Division to Zbroski ; Buxhowden's 5th and 7th Divisions to Novemiasto ; Barclay de Tolly to Kolozomb and Sochozin ; and Dorochow to Borkovo, all on the line of the Oukra, and west of the Naref.

The next day Napoleon himself arrived at Okunin, 6 miles south-east of Barkovo, and reconnoitred the Russian position. From all the information he received, and from what he could see, he concluded that the Russians were about to attack him. But he was never the man to allow himself to be attacked when it was in his own power and to his evident advantage to assume the offensive. It was now eight long weeks since the bulletins he sent to Paris contained news of a battle ; there was nothing to tell of but marching and counter-marching, which was getting monotonous ; he must fight, not only for the purpose of finally defeating the Russians, as he hoped to do, but also to secure for his own troops winter quarters free from attack.

The bloody die was cast.

V.

The main body of the Russian Army was at Nasielsk, about 12 miles south-west of Pultusk. Here they were furiously attacked by Davout's Corps,

* Benningsen was now 62 years old. The oldest of Napoleon's Marshals, Lefebvre, was 52 ; Augereau was 50 ; Napoleon, Davout, and Ney were each 37 ; and Murat was only 36. Lannes and Soult were a few months older than Napoleon.

on the 24th of December. The hero of Auerstadt gave hard blows, and the Russians fell back before him to Streshegorin, opposite Pultusk. This one fight alone had the effect of breaking the whole Russian line on the Oukra. And now Napoleon made what the ablest military critics (notably von Wartenburg) call the greatest mistake in the strategy of the campaign. He should have at once sent up Lannes to support Davout. But instead of doing this he sent Lannes round to Pultusk, to bar the Russian retreat across the Naref. And not content with this mistake, he sent no support to Lannes, who had only 15,000 men. The Emperor made a mistake similar to that for which he bitterly reproached his chief of the staff, Berthier, two years afterwards, in the Eckmühl Campaign. That is, he dispersed his forces instead of keeping them well together. The only excuse that can be made for him is that here, as well as at Jena, he had no notion as to where the main body of the enemy was located; but then, at Jena, he did not wilfully carry out any strategic division of force. Jena proved to be a decisive blow; but there could be no decisive blow here, and it was unreasonable to expect one. He made another great mistake too; that is, he attempted to surround the enemy on all sides before he had any notion of where the tactical issue was going to be decided. Of course this meant separating his different Corps, and separating them in such a way that he could not effect a junction at the decisive moment. Something led him to believe that the main body of the Russians was at Golymin, 20 miles north of Nasielsk; so he ordered the 3rd, 7th, and Guard Corps to march on this place; while he left Lannes to deal with what he thought was a weak and detached left wing at Pultusk. To keep up connection between the column marching on Golymin and Lannes' Corps, he sent Gudin's division from the 3rd Corps, from Nasielsk to Pultusk, by an intermediate road.

But, in the meantime, General Benningsen had concentrated by his left, on Pultusk, with 45,000 men, leaving only two weak divisions in Golymin.

When Lannes had struggled through the forest and marshes and mud, with much difficulty, and come out in the open south of Pultusk, he found a Russian

December 26.

Army facing him, three times the size of his own. All at once it flashed through his mind that the Emperor had made a mistake.* But like the brave and loyal soldier that he was, he determined to carry out the orders he had received, and to fight the Russians where they stood, whatever might be their number, and however tried their bravery. Foreseeing the difficult task before him, and knowing that his force was not sufficient by itself to effect anything decisive, he sent a hurried message to Marshal Davout, in which he explained his critical situation.

* At Wagram, when he was dying, he reminded Napoleon of this.

Facing the French, General Benningsen had drawn up his Army in front of Pultusk; one of his wings on the river, the other on a wood, and a strong reserve immediately behind his centre.

The battle was a severe one, and the issue for a long time doubtful. The French barely held their ground on their right; they wavered in the centre; but on the left, General Reille, ably seconded by the charges of Becker's dragoons, drove the Russians off the field. Towards evening, Gudin's division, commanded by General Daultanne, came out from the direction of Golymin, and threatened to roll up the whole Russian line of battle from right to left. But there was a considerable interval between this division and the left of the 5th Corps. The Russians made an effort to wedge themselves in here, but they failed. Benningsen, seeing the failure of this last effort, now availed himself of the cover of night, drew off his Army, and led it over the bridges of Pultusk.

In this battle the French, to whom the victory must be awarded, lost 1,500 men in killed and wounded. The Russians had 3,000 killed and wounded, and they left behind 2,000 prisoners and an immense quantity of artillery.*

On the extreme left of the Grand Army, on the day of the battle of Pultusk, Marshal Ney met the Prussians under General Lestocq, at Soldau. Here the Prussians fought with the greatest bravery and obstinacy. The narrow streets of Soldau were choked with dead and wounded, and the town had to be taken house by house. Even after the Prussians were driven out, they turned and made four bayonet charges against the French, between seven o'clock and midnight. At last they retired, after a great loss in killed, wounded, and prisoners.

And on the same day, Davout and Angereau completely wiped out the two Russian divisions which they met at Golymin.

So that on this bloody day, for a space of seventy-five miles from Pultusk to Soldau, there had been obstinate fighting, in which the Russians were defeated, with the total loss of 20,000 men, 80 guns, numerous prisoners, and a considerable quantity of baggage. The French had not lost a single prisoner, nor had one deserter, but they lost about 5,000 men in killed and wounded.

So far the Emperor was successful; more, indeed, than he deserved; but he could now put his Army into winter quarters without fear of being disturbed. The Russians had retired to Arys, north of the Spirding Lake and the Johannisburg Forest.

Now the weather got so bad that no movements of troops were possible; and the French Army went into cantonments, arranged as follows:—

The 5th Corps on the right, in the angle between the Vistula and the Bug, with Sierock as centre.

* Benningsen sent an extraordinary account of this battle to St. Petersburg. He stated that he had gained a signal victory over the Emperor Napoleon, who commanded in person the Corps of Marshal Davout, Marshal Lannes, and Marshal Suchet, and the cavalry of Murat!

The Pregel flows from east to west, into the Frisches Haff near Königsberg. The river Alle, running up from the south, and passing Junkowo, Guttstadt, Heilsberg, and Friedland flows into the Pregel at Wolden. For about 50 miles of its course north of Junkowo it flows nearly parallel to the Passarge, which, at Elper, is only 8 miles to the west of it, and which flows into the Frisches Haff at Braunsberg, 30 miles south west of Königsberg.

Ostrolenka is 30 miles north east of Pultusk, on the Neva, where the Omulev falls into it from the north-west, and stretching north from Ostrolenka for nearly 40 miles to the group of lakes is the Johannsberg Forest, celebrated in Polish legend as the dark abode of only devils and wolves.

In any country where military operations are carried out the state of the communications and the climate are important factors in the strategy of the campaign, but in few cases have these factors influenced strategy to the extent which they did in the campaigns of Eylau and Friedland.

Describing the Theatre of Operations, a writer* says —

"There was no metalled road in the country, the best of the communications were mere banks of earth, not even revetted except where their passage across marshes rendered it impossible to maintain them without artificial support. By the droughts of summer or the frosts of winter these so-called roads were hindered to a consistency which allowed of the passage of artillery with as much ease as is ever possible where unmetalled roads have to be used. When soaked with rain or dissolved by frosts they became almost impassable. In wet weather the slush attained a depth to be measured in feet, not in inches. In December, 1806, the infantry sank to their knees in the soft mud, the horses to their backs, the guns to their axes. Sometimes evening guns absolutely disappeared in the clayey mire. Double and quadruple teams could not drag them along as fast as the 40 mules an hour which infantry without the aid of roads could cover."

In the Theatre of Operations the principal roads were —

- (1) Dantz to Warsaw by the right bank of the Vistula.
- (2) Dantz to Königsberg by Elbing and Braunsberg.
- (3) Warsaw to Königsberg by Suroch, Pultusk, Prusse, Bartoszew, and Eylau.

(4) Elbing to Ostrolenka and soon to St. Petersburg.

- (5) From Thorn to Elbing, the north of the Vistula, to Elbing, and direct to Narek and Pultusk, and from the north east crossing the Dvina to Gumbinnen, and thence east to Suroch, Elbing, and to the Warsaw-Königsberg road at Mlawka.

At the beginning of the campaign Prussia still had the strong fortresses of Dantz, Königsberg, Prusse, dominating the country to the Frisches Haff, and Gumbinnen, which commanded the principal passage across the Lower Vistula.

* *Journal of the Campaigns of Frederick the Great*.

IV.

The French Army, sometimes called the Grand Army, which was now about to try its strength in a struggle with Russia, was composed of the following Corps, stationed at the places mentioned, about the beginning of November 1806:—

First Corps:	Bernadotte,	18,000 ;	near Lübeck.
Third Corps:	Davout,	22,000 ;	at Küstrin.
Fourth Corps:	Soult,	20,000 ;	near Lübeck.
Fifth Corps:	Lannes,	16,000 ;	at Stettin.
Sixth Corps:	Ney,	20,000 ;	at Magdeburg.
Seventh Corps:	Augereau,	17,000 ;	at Berlin.
Imperial Guard,		8,000 ;	at Berlin.

The Cavalry Reserve, commanded by Murat, was nearly 10,000 strong, at Berlin. And another body of cavalry which was about to be put under the command of Bessières, consisted of 8,000 men. The Emperor also formed in Silesia a 9th Corps, of about 15,000 men, which he placed under the command of Prince Jerome, whose business it was to reduce all the strong places in that province, and to protect the right rear of the invading army from a possible advance by Austria. As the campaign progressed, a 10th Corps was raised and given to Marshal Lefebvre, to carry out the siege of Danzig.

To oppose the Emperor in the field there was, first of all, General Lestocq, at the head of 22,000 men, in and about Thorn. Then there was the first Russian Army, 55,000 strong, under General Benningsen in and about Warsaw. This Army was organised in four Infantry Divisions, after the fashion of the French Armies during the early years to the Republic. Following Benningsen's Army at a distance of a few day's march was a second Russian Army, 40,000 strong, under General Buxhowden. This also consisted of four Infantry Divisions. Finally, there was a reserve of two or more Divisions, under General Essen, on the Nieruen.

The plan of campaign was a very simple one. Napoleon wished to seize and hold Königsberg, so he made this his principal objective. During the earlier part of the campaign he was uncertain as to whether the Russians would oppose him; but nothing would please him better than that they should do so, in which case he expected another Jena on the plains of Poland, which would be a death-blow to the Coalition.

Immediately before the opening of the campaign the following were the movements of the French troops:—

Davout from Küstrin to Posen.

Augereau from Berlin to Küstrin and Landsberg.

Lannes from Stettin to Stargard and Schneidmühl.

Murat to Posen; and Jerome to occupy Kalisch as a central position from which to act against the Silesian fortresses.*

* General Vandamme captured the two principal Silesian fortresses, Glogau and Breslau, on the 2nd of December 1806, and the 7th of January 1807, respectively.

For political as well as for military reasons Napoleon determined that the first thing for him to do was to occupy Warsaw. It was a fine good *point d'appui* for his left; it commanded the principal passage across the Vistula and the roads which led direct into the heart of Russia, and its possession assured him an influence over the Poles as well as their support. So he quickly arranged for the advance of his Army to the line of the Vistula between Elbing and Warsaw. The movement of his Corps was to be by echelon right in front. Davout and Murat were to lead, and after them in the following order, Lannes, Angereau, Saint, Ney, and Bernadotte. In this way each Corps in its advance was protected from attack by the Corps coming after it, and the Vistula protected the left of the whole Army. Here it may be remarked that Napoleon was about to carry out the crossing of the Vistula as he advised General Moreau to cross the Rhine in 1800. When he had thus secured the line of the Vistula his intention was to march against the Russian Army, but if it had fallen back, take advantage of the dispersion of its Corps and their superiority of his own forces to wipe it out in detail. From being master of the country his idea was to occupy all the important places, Königsberg first of all, and the principal strategic points, until the Czar should come to terms.

As they approached the Vistula, and when the Emperor got information that the whole Russian Army was concentrated somewhere beyond the river (where he did not exactly know), his Corps moved, roughly, in two large bodies, the first consisting of the Corps of Davout, Angereau and Lannes, with Murat in chief command, then the Corps of Saint, Ney, and Bernadotte under the eye of the Emperor himself, though nominally commanded by Saint. His force was nearly 80,000 strong.

In the end of November Napoleon arrived in Posen. At the day of 27th of the month, the army of Moreau, having struck against the Russian army at Elbing, 20 miles west of Warsaw, and putting it to flight, after a short skirmish. Now Davout was a days march behind Moreau. Lannes was at Iława, 12 miles west of Elbing, Angereau at Gostynin, Ney and the Guard at Posen.

Next day the Russians evacuated Warsaw, and Murat entered the city. On the 29th of November, a day after the capture of Warsaw, the army of Moreau was within 10 miles of Posen. On the 30th of November, the army of Davout arrived at Posen.

During the week of the 27th to the 30th of November, Napoleon's army was in the position of having the Russian army in front of it, and the Prussian army to the right. On the 30th of November, the Russian army was at Posen, and the Prussian army was at Elbing. On the 1st of December, the Russian army was at Posen, and the Prussian army was at Elbing.

On the 1st of December, Napoleon's army was in the position of having the Russian army in front of it, and the Prussian army to the right. On the 2nd of December, the Russian army was at Posen, and the Prussian army was at Elbing. On the 3rd of December, the Russian army was at Posen, and the Prussian army was at Elbing.

arrived in Warsaw; Ney occupied Thorn, and pushed some of his troops, preceded by his light cavalry, out beyond this place, to the north-east and east.

In the meantime Benningsen was timid and wavering; he seems to have had no clear notion as to what he ought to do or how he ought to do it; but one thing he knew for certain—the victors of Austerlitz, Jena, and Auerstadt were coming to meet him, and they would prove to be rough play-fellows. He had fallen back on Ostrolenka; and when he had stayed there a few days, doing nothing, he ordered up Buxhowden to join him, moved down in the direction of Pultusk, and at the same time ordered Lestocq to advance on Thorn.

Soult's Corps, the 4th, had now crossed the Vistula, at Plock. Here a bridge was thrown across the river; and Augereau with the 7th Corps, followed Soult.

Napoleon had been for some days doubtful as to what the Russians were going to do, but at last he became certain that they were advancing to meet him. But even then he did not know from what quarter exactly to expect the attack, so he made the following arrangements.

The second Cavalry Reserve, which he had placed under the command of Bessieres, was to push out from Thorn to Rypin, 30 miles east-by-north across the Drewenz, in order to keep up communication between Ney and Soult, and, as far as possible, to reconnoitre the country north of the Vistula. He then ordered Davout to cross the Vistula at Novydvor, and Augereau at Sakrotchim. In this way he would have four

Corps moving northwards simultaneously, and in this order, from west to east:—Ney, Soult, Augereau, and Davout; moving on a front of about 120 miles.

His object in these movements may be easily perceived when they are followed out on the map. (In studying them it would be well to keep in mind that owing to the bad state of communications in the country and the difficulty of getting about, the reconnaissances could not be performed in anything like a satisfactory manner; the information took a long time in coming in to headquarters, so that when it came in it no longer represented a true state of affairs.) The Emperor could not tell whether the Russians were going to hold the line of the Naref or to get between him and Königsberg. But by his arrangements he had prepared for both eventualities. If the Russians remained at Pultusk, he could turn their right and cut them off not only from Königsberg but from their allies, the Prussians, by bringing up his left with the Corps of Bernadotte, Ney, and Soult. If they would not stand to fight at Pultusk there were only two other things they could do: (*a*) fall back on the frightfully inhospitable region of the lakes and the Johannisburg Forest, which meant for them starvation and death; or (*b*) carry out a flank march to Königsberg while being followed up by Murat, Lannes, Davout and Augereau.

This, then, was Napoleon's strategy up to and in the middle of December. It is marked by more caution and less boldness than he displayed in any other campaign; it is rather the crawl of the tiger than the spring of the lion.

On the 7th he had ordered Davout to cross the Naref, near its junction with the Odra. Davout carried out this order with his usual promptness, and threw a bridge of boats across the river. At this time, but especially during a week in the middle of December the weather was so very severe that it was impossible for either of the belligerents to carry out any operations worth speaking of. On the evening of the 13th the Emperor, at Posen, received a despatch from Murat, dated midnight, December the 10th, to say that the Russian Army had retreated from the eastern bank of the Naref. Hereupon he sent back a message to Murat to follow up the retreating Russian with all his available forces, to cut them off from the road to Königsberg and to drive them on to the bayonets of Ney and S. Advancing from the west.

But having sent off this order the Emperor was not quite satisfied; he suspected the news he had got from Murat, he thought it too good to be true; so he now acted on the advice he was so fond of giving to others—that is to verify for his own satisfaction the report he had received from his subordinate. Never before, nor after did he display such energy as now. He started from Posen on the evening of the 16th. The thermometer was below zero, and the icy wind blew the sand so hard that the members of his staff had their noses cut and bleeding as if they had been scratched, and torn by needles. He arrived in Warsaw on the 19th, but only to find to his astonishment and disgust, that Murat's report with regard to the Russian Army was altogether inaccurate. Murat experienced at the hands of his brother-in-law a very bad quarter of an hour, as he afterwards confessed, but then the Emperor rose to the occasion and issued the following fresh orders:—

Nei to move on Gólab at the crossing of the Drawa with his cleaned guard at Rybn (12 miles east of Gólab) and his light cavalry on his left. Bernadotte to take Nei's place at Thorn. Solt to move northwards from Puck in the direction of Poznań but not to lose touch with Nei's right. Bessières light cavalry to push along the Odra and keep in touch with the cavalry of Augereau. Lannes to move up the left bank of the Elbe and the Guard to take his place at Warsaw.

From Napoleon's correspondence and his subsequent remarks on this campaign we are getting a better idea of his first intention after he had arrived at the Austro-Russian point of contact between the two opposed to him—the frontier of Prussia, and then turn against the main force of the Russian Army, and thus to repeat his great success of the 11th of June in the penetration between the Silesians and the Austrians. This is the strategy he conceived and decided upon, and which he put into effect at Eylau, on the 8th of January, and at Friedland on the 6th of June, 1807. At Eylau Napoleon's

Austerlitz to Waterloo, attempting to repeat the great stroke by which he won his first campaign. He always loved the principle of the wedge, and no man could hammer it home better.

After much wavering, and valuable time wasted in useless Councils of War, Benningsen came to the conclusion that the best thing he could do would be to stand on the defensive behind the line of the Naref. The other Russian Army, Buxhowden's, had got as far as Ostrolenka on the 19th; so that now these two forces looked as if they might be trusted to hold this line, or at least to present a strong front to the invaders.

But suddenly everything was changed. The Commander-in-Chief of the Russian forces now came on the scene. General Kamenski was an ill-tempered, decrepit, ignorant and obstinate relic of the school of Suvaroff and the old régime. He was now in his 81st year.* The fact that Benningsen was standing on the defensive would have been quite enough by itself to make Kamenski assume the offensive; but in addition to this he had express orders from the Czar Alexander to attack at once, and not to stop until he had driven every live Frenchman across the Oder. He set about carrying out his orders at once. He pushed out a large body of troops to the Oukra; moved Gallitrin out in support of the 3rd Division at Glubovo; sent Sedmaratzki with the 6th Division to Zbrozki; Buxhowden's 5th and 7th Divisions to Novemiasto; Barclay de Tolly to Kolozomb and Sochozin; and Dorochow to Borkovo, all on the line of the Oukra, and west of the Naref.

The next day Napoleon himself arrived at Okunin, 6 miles south-east of Barkovo, and reconnoitred the Russian position. From all the information he received, and from what he could see, he concluded that the Russians were about to attack him. But he was never the man to allow himself to be attacked when it was in his own power and to his evident advantage to assume the offensive. It was now eight long weeks since the bulletins he sent to Paris contained news of a battle; there was nothing to tell of but marching and counter-marching, which was getting monotonous; he must fight, not only for the purpose of finally defeating the Russians, as he hoped to do, but also to secure for his own troops winter quarters free from attack.

The bloody die was cast.

V.

The main body of the Russian Army was at Nasielsk, about 12 miles south-west of Pultusk. Here they were furiously attacked by Davout's Corps,

* Benningsen was now 62 years old. The oldest of Napoleon's Marshals, Lefebvre, was 52; Augereau was 50; Napoleon, Davout, and Ney were each 37; and Murat was only 36. Lannes and Soult were a few months older than Napoleon.

on the 24th of December. The hero of Auerstadt gave hard blows, and the Russians fell back before him to Streshogora, opposite Pultusk. This one fight alone had the effect of breaking the whole Russian line on the Oukra. And now Napoleon made what the ablest military critics (notably von Warthenburg) call the greatest mistake in the strategy of the campaign. He should have at once sent up Lannes to support Davout. But instead of doing this he sent Lannes round to Pultusk to bar the Russian retreat across the Naref. And not content with this mistake, he sent no support to Lannes, who had only 15,000 men. The Emperor made a mistake similar to that for which he bitterly reproached his chief of the staff Berthier two years afterwards in the Eckmühl Campaign. That is, he dispersed his forces instead of keeping them well together. The only excuse that can be made for him is that here, as well as at Jena, he had no notion as to where the main body of the enemy was located, but then, at Jena, he did not wilfully carry out any strategic division of force. Jena proved to be a decisive blow, but there could be no decisive blow here, and it was unreasonable to expect one. He made another great mistake too, that is, he attempted to surround the enemy on all sides before he had any notion of where the tactical issue was going to be decided. Of course this meant separating his different Corps, and separating them in such a way that he could not effect a junction at the decisive moment. Something led him to believe that the main body of the Russians was at Golymin, 20 miles north of Neshinsk, so he ordered the 3rd, 7th, and Guard Corps to march on this place, while he left Lannes to deal with what he thought was a weak and detached left wing at Pultusk. To keep up communication between the column marching on Golymin and Lannes' Corps, he sent Gudin's division from the 3rd Corps from Neshinsk to Pultusk by an intermediate road.

But in the meantime, General Bernierzen had concentrated by his left on Pultusk, with 45,000 men leaving only two weak divisions in Golymin.

When Lannes had struggled through the forest and marsh, over-

December 26

and with much difficulty, and came out into the open south of Pultusk, he found a Russian Army twice his own, three times the size of his own. At once it flashed through his mind that the Emperor had made a mistake. But, as the brave and loyal soldier that he was, he determined to cry out the orders he had received, and to fight the Russians where they stood, without giving them time to retreat and to scatter their heavy artillery along the banks of the Naref before him, at the same time, as he felt, was not so far from his first intention, to send Gudin's Corps with a fresh division to Moscow. But it was too late to expect this sort of assistance.

* A. W. K. 1, p. 128. See also *ibid.* p. 129. See also *ibid.* p. 129.

Facing the French, General Benningsen had drawn up his Army in front of Pultusk; one of his wings on the river, the other on a wood, and a strong reserve immediately behind his centre.

The battle was a severe one, and the issue for a long time doubtful. The French barely held their ground on their right; they wavered in the centre; but on the left, General Reille, ably seconded by the charges of Becker's dragoons, drove the Russians off the field. Towards evening, Gudin's division, commanded by General Daultanne, came out from the direction of Golymin, and threatened to roll up the whole Russian line of battle from right to left. But there was a considerable interval between this division and the left of the 5th Corps. The Russians made an effort to wedge themselves in here, but they failed. Benningsen, seeing the failure of this last effort, now availed himself of the cover of night, drew off his Army, and led it over the bridges of Pultusk.

In this battle the French, to whom the victory must be awarded, lost 1,500 men in killed and wounded. The Russians had 3,000 killed and wounded, and they left behind 2,000 prisoners and an immense quantity of artillery.*

On the extreme left of the Grand Army, on the day of the battle of Pultusk, Marshal Ney met the Prussians under General Lestocq, at Soldau. Here the Prussians fought with the greatest bravery and obstinacy. The narrow streets of Soldau were choked with dead and wounded, and the town had to be taken house by house. Even after the Prussians were driven out, they turned and made four bayonet charges against the French, between seven o'clock and midnight. At last they retired, after a great loss in killed, wounded, and prisoners.

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Now the weather got so bad that no movements of troops were possible; and the French Army went into cantonments, arranged as follows:—

The 5th Corps on the right, in the angle between the Vistula and the Bug, with Sierock as centre.

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The 3rd Corps in the angle between the Bug and the Naref, with outposts as far as Ostrolenka. In case of attack, Davout was to concentrate at Pultusk.

The 4th Corps, with its headquarters and stores at Plock, lay between the Naref and the Oukra. If attacked, it was to concentrate at Golymin.

The 7th Corps was between the Oukra and the Vistula, and the Guard was in a strongly entrenched camp at Praga.

Bernadotte, with the 1st Corps, had his headquarters at Osterode, and occupied Elbing and Marienwerder.

Thorn was the headquarters of the 6th (Ney's) Corps, but its advanced posts were in Soldau, Mlawa, and Willemburg.

The front of the cantonments was watched and covered by light cavalry; and the Reserve Cavalry was in the valley of the Vistula.

Thus the French Army now covered roughly the arc of a circle the centre of which was at Wyszogród, and the main points on which were Gilgenburg, Willemburg, Ostrolenka and Brok, that is, from the Oukra across the Naref and on to the Bug.

The rivers, especially the Vistula, proved to be of great use, for conveying supplies to the cantonments.

This then was the state of affairs in the Theatre of Operations at the beginning of January 1807.

VI.

The objects to be attained by the French troops taking up their positions in cantonments were rest and organisation of the Army; covering the blockade and sieges of the Vistula fortresses of Graudenz and Danzig; construction of a strong base of operation for the next campaign; security of territory occupied in case of attack; and the organisation of the military resources of Poland.

During the whole winter these requirements were kept steadily in view. The passages of the Vistula were strengthened by *têtes-de-pont*, and special attention was also directed to the formation of hospitals and ambulance trains.

In the beginning of January the strength of the French Army in Poland was 140,000 men, and that of the Russian Army 110,000.

Kamenski had been recalled; Buxhowden had given up his command, and Benningsen was now Commander-in-Chief of the Russian forces. Benningsen thought he had better do something

January 18, 1807.

to justify his selection; so, on the 18th of January, he suddenly resumed the offensive. He left two divisions before Ostrolenka and one division in the region of the lakes north of the Johannisberg Forest, to mask the movements of the rest of his Army. Then he took the seven divisions which remained to him, in all about 80,000 men, and moved with this force from Arys to Rhein, that is, direct

to the west; covering the left flank of his advance with swarms of Cossacks. His intention was to attack and, if possible, overwhelm the 1st Corps, push on to the Lower Vistula, relieve Danzig, and, by turning Napoleon's left flank, compel the French to fall back on the Oder. This was a brilliant conception, as it would protect Königsberg and lead to a junction with the Prussians; but its weakness consisted in the fact that it involved a flank march in the vicinity of a watchful and enterprising enemy.

Marshal Ney's men were spread out and pushed up well to the north of the Vistula trying to pick up provisions. Brushing aside the Cossacks they knocked up against the Russian advancing army on the passage, and they at once gave the alarm.

When Bernadotte heard that he was about to be attacked by the whole Russian Army the first thing he thought of was falling back. He concentrated at Mohrungen first; but Ney, who had a wonderful eye for country and could select a good position better and quicker than any man in Europe, advised him to push down, south-east, to Osterode. Ney himself had taken up a position at Nidenberg, 25 miles south-east of Osterode. Bernadotte had good sense enough to take Ney's advice; and the only thing he could do, with his three divisions of infantry and two divisions of cavalry in face of 80,000 men, was to keep falling back slowly. He concentrated at Osterode and Saalfeld. The Russians beat his rear guard at Liebstadt on the 24th and at Mohrungen on the 25th, so that Bernadotte was now stretched out on a line between

January 24. Liebemühl and Osterode.

Now Benningsen was only beating the air; he had failed to surprise Bernadotte; and after marching 70 miles through a frightful country in 10 days, he halted for three more on the 28th, on account, as he said, of fatigue and want of food.

The Prussians were now at Freystadt, *i.e.*, between Bernadotte's position and Thorn; the Russian right was at Eylau, their left at Allenstein, their centre, pushed well forward to Mohrungen, with the reserve at Guttstadt.

Bernadotte, acting on orders from the Emperor, moved round by the east of the Prussians, in the direction of Strasburg, in order to be in a position to cover Thorn, which was rather dangerously exposed and had its bridge swept away by the ice. Lefebvre was also ordered to move down with his force to protect Thorn. Bernadotte arrived at Strasburg on the 30th of January.

Napoleon did not think that the Russian General was enterprising enough for any great *coup*; but gradually he had his eyes opened; on the 27th he saw clearly the move of the enemy, and at once raised his cantonments. The troops were supplied with four days' bread and as much biscuit

January 28.

January 27.

January 30.

as could be transported on carts; then the Emperor ordered the following movements:—

Soult to concentrate at Wittenburg; Ney at Niedenburg and Hohenstein; Augereau at Mława; Davout at Myzynieć; Lannes' corps (now commanded by Savary) at Brok, on the Bug; Murat's cavalry at Oertelsburg; and Bernadotte covering Thorn. Lefebvre, with 16,000 men, was on the extreme left; and the whole French force amounted to 135,000 men.

In four days this force had been concentrated towards Wittenburg with a combatant superiority of 40,000 men

January 31.

for the offensive. And now Napoleon's intention was to march round to the rear of the Russian Army, cut its communications, and either make Benningsen surrender or hurl him into the Baltic.

The Grand Army moved in three columns: (a) on the left, the

February 1.

6th Corps, pushing on from Hohenstein; (b) in the centre, the 4th and 7th Corps, with the Cavalry Reserve and the Guard, moving on Passenheim; (c) on the right, the 3rd Corps, by Oertelsburg.

The Russian Commander, all ignorant of the trap which was set for him, moved from Osterode to Loebau.

February 3.

One step further, one more day's delay, and nothing could save him from destruction. But now, just when he stood most in need of it, fortune showed itself in his favour. A French officer who had been sent by the Emperor to Bernadotte, bearing despatches which pointed out the combinations and plans of the threatened attack on the Russians, and the positions of the different Corps, fell into the hands of the Cossacks, and the papers found on him were at once sent to Benningsen. The Russian General saw at once the danger he was in. He stopped all his offensive movements, and fell back on Jonkowo. His rear guard fought an

February 4.

action with the French advanced guard, at Bergfried, to cover his retreat. Then by hurried night marches he fell back on Landsburg and Eylau.

Benningsen's great plan had failed miserably and his only consolation was that he had avoided entire defeat. But at Eylau he was brought to bay; he had to stand and fight there. It was the last point on which he could cover Königsberg. The ground was well suited to the Russian troops; and Benningsen had determined to strike such a blow here at the French as would check their further advance.

VII.

The Russian Commander drew up his Army on a range of low hills behind Eylau. The town of Eylau

February 7

itself is at the junction of three important roads; that from Landsberg, on the south-west, to Friedland, on the

north-east; and the main road northward, by Schloditten to Königsberg. Just south of Eylau is a large cemetery; south-east of this is the village of Rothenen, and a little to the north-east, on the left of the Russian position, the village of Serpallen. Between Serpallen and Rothenen a road ran from Eylau, by the cemetery, to Bartenstein on the south-east.

The Russian Army was drawn up in three lines on the east and north-east of Eylau. They also occupied the town itself and the cemetery, which formed a detached post in their front, covering their Army and arresting the first attacks of the French.

On the afternoon of the 7th, Soult came up, and, supported by the cavalry of Murat, drove the Russians out of Eylau after a very severe fight. The Emperor at first thought that the Russians would now retire from their position and seek a better one nearer to Königsberg; but that night the glare of their camp-fires on the opposite hills showed him that they meant to stand and fight it out next day.

When he knew this he sent urgent messages to Davout and Ney to come up on his right and left respectively. Davout sent back reply that he would be ready to fall on the Russian left at daybreak. No reply was received from Ney.

Not counting Ney's Corps the French Army here amounted to 50,000 men; and Ney's Corps amounted to about 12,000.

The Russians had seven divisions, making in all about 72,000 men. About 8,000 Prussians were expected to join them in the night, or early next day. Benningsen deployed five of his divisions in two lines, and kept two divisions in reserve. In each division of the first line the Russian regiments were drawn up in a peculiar manner; the centre battalion deployed, the other battalions in column behind the wings. The cavalry were on the flanks and with the reserve. The artillery was along the front in numerous batteries. The left was on the village of Serpallen, the right on Schloditten,* the centre was in front of Eylau.

The French Army, when it met the Russians, had carried out a strategic march in three columns. Napoleon was with the centre column, which included the Corps of Soult and Augereau, the Reserve Cavalry and the Guard. He made Soult's Corps deploy to the right and left of Eylau. St. Hilaire's Division, of this Corps, extended on the right to occupy the village of Rothenen. So that Augereau's Corps, when it entered into the line of battle, was between this division and the two other divisions of Soult's Corps. The Guard Cavalry, and Grouchy's and Klein's dragoons, were behind this part of the line.

The Emperor's idea was to hold the Russians in front while Ney and Davout were carrying out their turning movements.

* The village of *Schloditten* is on the Königsberg road about half a mile north of Schloditten.

The two Armies were deployed perpendicular to their line of operations; namely, the French on the Landsberg road, and the Russians on the road to Königsberg.

Early on the morning of the 8th of February the battle of

February 8.

Eylau began with a furious cannonade. The Russians being, in huge masses, suffered from this more than the French who were extended in comparatively shallow formation, and who also knew how to make the best use of the natural irregularities of the ground.

Benningsen tried to overwhelm the French left, but failed.

In the meantime Davout, coming out by Serpallen, attacked the Russians on their left flank, and beat them back. Napoleon wished to profit by this success, which was only partial, by pushing on the general attack; he therefore ordered forward Augereau's Corps and the division of St. Hilaire. As these were advancing a blinding snowstorm drove into their teeth. They lost their direction, swinging too much to the left. Here they came right into the fire of 72 guns, and after suffering frightful losses had to fall back. To cover their retreat Napoleon sent out 80 squadrons of cavalry, led by Murat. This force swept on like a tornado, and cut the Russian Army clean in two.

Davout's attack was for some time attended with great success; he captured the villages of Serpallen and Klein-Saus garten. But then the Prussian Corps came on the scene, sweeping round by the rear of the Russian Army to the support of its beaten and scattered left wing. They succeeded in bringing Davout to a standstill, but did not deprive him of an inch of the ground that he had gained.

On the French left, Ney did not receive his orders till about midday on the day of the battle. But when at last he got them he hastened up to the Russian right, and meeting the Prussian Corps, drove it back beyond Schloditten. But by this time night had come on, and the great battle was undecided.

The Russian losses amounted to 27,000 men in killed and wounded, and 4,000 prisoners. They also lost 24 guns and 16 stand of colours.

The French losses in killed and wounded amounted to about 10,000.

During the night after the battle Benningsen fell back in the direction of Königsberg. The French made an attempt to follow up; but they were so exhausted that they could not carry out anything like an effectual pursuit.

Although Benningsen had fallen back, yet he had attained some of his objects by standing to fight at Eylau. He had, in a manner, taken his great opponent by surprise, and had struck hard at him. He had so weakened the French that they were not able to pursue. The French Army, and especially the cavalry, were in a bad state;* so that Napoleon thought it well to stay for eight days

* *Thiers.*

longer in the neighbourhood of Eylau, to recruit as well as to impress his victory on Europe.

He then went again into winter quarters. His Army first moved up the Alle, and then westwards, in the direction of Thorn, Marienwerder, and Elbing. He practically gave up Warsaw leaving it in charge of a "scratch" corps composed of Bavarians and Poles; because he recognised that a line from Danzig to Warsaw would be more than he could hold with the force he had in hand. But in charge of this extreme right of his position he placed one of his best generals, Massena, "the spoiled child of victory."

With the object of again resting his troops in secure winter quarters, and covering the siege of Danzig the Emperor issued the following orders for cantonments, which were carried out in the third week of February.

Bernadotte on the Passarge, from Braunsberg to Spanden; headquarters at Pr. Holland, 12 miles west of Spanden.

Soult on Bernadotte's right, on the line Wormditt, Mohrunge, Liebemühl.

Davout on the line Allenstein, Hohenstein, Gilgenberg. Ney at Guttstadt, to watch the passages of the Alle. The Guard, Oudinot's Grenadiers, and the headquarters at Osterode, which was the point of concentration for all the Corps in case of a Russian advance. He had carefully studied the Osterode plateau, and mentions in a letter (February 26th) that he had calculated he could collect a force of 95,000 men there in 36 hours.

VIII.

Immediately after the battle of Eylau, Napoleon tried to make a separate peace with Russia, but failed, as he offered too little and wanted too much.

Benningsten fell back and re-established his Army near Königsberg, where he found supplies in abundance and fairly good hospital accommodation. But his extreme left had been defeated; Essen, who commanded in that quarter, had attacked Lannes at Ostrolenka,

on the 16th of February, and had been defeated with the loss of 1,200 men and 7 guns. This battle, small as it was, was sufficient to secure the extreme right of the French Army.

Now Benningsten must have seen that he had lost great opportunities, that his movements were faulty, and that his plans had miscarried through his own fault alone. He had tried to cut off Bernadotte; but he went within an ace of being himself cut off. He stumbled on Ney. But "instead of falling on the rear of Ney's Corps, scattered as it was over 25 leagues, he made a long detour to gain its head, and drove it back on its line of retreat; thus allowing

Ney to concentrate in an excellent position at Gilgenburg." * He marched on Jonkowo when he should have retired on Liebstadt. He was very nearly being driven off the road to Königsberg and into the Frisches-Haff. He knew all this; and, mortified by his want of success, he requested to be relieved from his command; but the Czar refused to accept his resignation, and urged him to remain at the head of the Army and act with energy; and Alexander sent at the same time a reinforcement to the Army which brought it up again to a strength of nearly 70,000 men. Encouraged to fresh efforts by this proof of confidence, Benningsen moved to the south, over the fatal field of Eylau, as far as Landsberg, where he arrived on the 26th; he even got as far as Allenstein † on the 28th of February. He had come to the conclusion that the French would retreat behind the Vistula; but he found Bernadotte on the Passarge; and after some desultory fighting and some losses, he went into winter quarters on both banks of the Alle.

There was now by mutual consent a suspension of hostilities, of which Napoleon took advantage to repair the gaps in his Army. By extraordinary exertions he overcame all the difficulties of transport; the arrival of provisional regiments enabled him to fill up the cadres to their proper strength; and with rest and care the French Army was soon restored again to fighting condition.

During the month of March he carried on pacific negotiations again with Prussia, but they led to nothing. He was also troubled on the score of military preparations in Austria; but they were mere flourishes, for Austria was not yet in a position to take her revenge for Austerlitz. He was now getting tired of this distant and wearisome campaign; so to bring matters to a conclusion he raised more men by enforcing the conscription of 1808, and increasing his cavalry to nearly 80,000. He intended, at the end of the sieges in which he was engaged, to increase his Army by two more Corps, under Mortier and Lannes; to place them between the Vistula and the Oder, as a connecting link between the field Army and the second Army.

Marshal Lefebvre went on with the siege of Danzig. The trenches were opened on the 18th of April, and the allies made a feeble attempt to relieve it on the 12th of May; but it fell on the 26th of May, and all its enormous resources fell into the hands of the French. Rapp was made governor of the captured town; and the besieging Corps was distributed between the Corps of Lannes and Mortier.

Napoleon was now free to begin a fresh campaign; he was not long in making dispositions for resuming the offensive, and the operations commenced early in June.

The Czar and the King of Prussia were at Bartenstein. The Russian Army had been reinforced by 30,000 men; England had promised fresh subsidies; political disturbances of a serious nature

* Jomini.

† According to his written orders to Lestocq.

had broken out in Hesse, on the French line of communications; the Swedes had attacked Stralsund, and, although defeated, were still threatening a fresh attack; and everything looked favourable for the allies. Benningsen was ordered to advance, and an intrenched camp was formed at Heilsberg. The Army of the allies was 120,000 strong. The French were about 150,000; organised in six Infantry Corps, a Cavalry Reserve, and the Guard.

About the middle of May, Napoleon had taken his Corps out of cantonments and formed them in camps, so that they might not be taken by surprise. Ney's Corps was placed from Guttstadt to Deppen; Davout at Hohenstein; Soult at Lieberstadt; Bernadotte at Braunsberg; and Murat in rear.

The Emperor had intended to move on June 10th, to go down the Alle, cut off the Russians from Königsberg, capture that city, and throw the enemy back on the Niemen.

But Benningsen anticipated him, by moving out of his intrenched camp, with all his Army; and whilst, by means of demonstrations, he held in their respec-

June 5.

tive positions the Corps of Bernadotte, Soult, and Davout, he directed the main strength of his forces on Marshal Ney, who, he thought, had pushed forward too far and was in an isolated position. But Ney did not allow himself to be overwhelmed by the Russian attack; so that Benningsen again gave up the offensive and retired to Heilsberg.

Here Benningsen's strategy was altogether at fault, and his attack on the French was a great mistake. The positions of the French were too strong; their Army was far superior to the allied Army, and they had command of all the fortresses. What Benningsen should have done was to await action on the Pregel, his right resting on Königsberg, and then defend that line; retiring, if necessary on the Niemen, and thus drawing the French further from their resources. *

Napoleon now assumed the offensive; he crossed the Passarge

June 8.

at Deppen, and advanced in three columns towards the intrenched camp of the Russians.

June 9.

On the night of the 9th, the following were the positions occupied by the French:—

Soult at Altkirch; Ney, Murat, and the Guard at Guttstadt; Davout holding the left bank of the Alle above Guttstadt, and Mortier approaching Guttstadt.

The Emperor made up his mind to fight a decisive battle on the very first opportunity, and thus finish the campaign; that is, if the Russians would only oblige him by letting him do so. He would then cut the Russian Army from Königsberg and its resources, and drive it across the Pregel.

On the 10th of June he prepared to attack Benningsen. Murat,

June 10.

Soult, Lannes, and Ney were to attack the Russians in front; Mortier and Davout were to

* *Adams.*

cut in between them and Königsberg; the Guard was in reserve; Victor was to hold the Prussians on the Lower Passarge, and sever them from their allies. Murat and Soult attacked the Russians at

June 10.

Heilsberg, where a hard fought battle took place, in which the Russians lost about 9,000, and the French 7,000 men. Napoleon has been blamed for fighting this battle. His critics say that he could have compelled the Russians to evacuate the position at a comparatively trifling loss, if he had only moved the bulk of his Army round by the Russian left.

On the day after the battle, Benningsen, seeing that Davout was evidently trying to cut him off from

June 11.

Königsberg, retreated up the right bank of the Alle, moving by Bartenstein and Schippenbeil. Napoleon sent his light cavalry to keep in touch with them; but he himself led the main body of his Army on Eylau, approaching Königsberg to place himself between the Russians and this town. He marched for Domnau, which was two marches from

June 12.

Königsberg and one from Friedland. Here he understood that the Russians were marching direct for Königsberg; so he despatched Soult and Murat to Kreuzburg; Lannes and Mortier to Domnan and Friedland. But next day he clearly saw that the Russians were marching on Friedland, so he ordered all his Corps to push forward in this direction. The French right was formed by the Corps of Lannes; the centre under the Emperor himself consisted of the Corps of Mortier, Ney, Victor (formerly Bernadotte's), and the Guard. On the left were the Corps of Soult and Davout, with the Reserve Cavalry under Murat moving on the road to Königsberg.

Benningsen had received orders to save Königsberg at all cost, so he threw several bridges across the Alle at Friedland, and passed from the right to the left bank. Then his advanced guard informed him that Lannes' Corps was isolated on the French right, which induced him to make an attempt to overwhelm it. But Lannes, by a series of clever and quick manœuvres, made it appear that his force was much greater than it really was, while he sent speedy information to the Emperor, who at once hurried up with three Corps and the Guard.

The manœuvres of Lannes' Corps and the unaccountable slowness of the Russians gave time for the main body of the French to come up, and to begin the great battle of

June 14.

Friedland on the afternoon of the 14th of June, the anniversary of Marengo.

The town of Friedland is on the left bank of the Alle, in a bend of the river, at the junction of three roads; that from Wehlau on the north; from Königsberg through Heinrichs-dorf on the north-west, and one from Eylau on the south-west. The Russian Army faced to the east; Bagration on their left, Gortchakoff on the right. Their position was cut in two by a stream called the

Mühlenfloss, flowing from the west. Opposite Bagration were Ney and Victor; opposite the Russian centre was Lannes; Mortier faced Gortchakoff, and Grouchy's cavalry formed the French left.

Napoleon's plan of battle was to make Heinrichs-dorf a pivot for the movement of his whole Army, and to push forward his right in the direction of the river. Then to cut off the retreat of the Russians by seizing their lines of communication and their bridges across the Alle.

Benning's intention was, first of all, to overwhelm Lannes, and then to continue his retreat to Wehlau. But he had already lost his opportunity and also wasted valuable time. Then on the afternoon of the 14th, when he heard that he had the whole of the French Army in front of him, he thought it better not to fight that day at all, but to fall back under the cover of night. To carry out this he ordered his left to cross over to the right bank of the Alle; and just as this movement was commencing the French attacked him.

Between 4 and 5 o'clock in the afternoon Ney's Corps moved out from the direction of the forest of Sortlack (about $1\frac{1}{2}$ miles south of Friedland) in echelon by regiments, right in front. Bagration at once drew back his left, and took up a position on a height south-west of Friedland, his left resting on the river. In too eagerly following up Bagration, Ney's right, commanded by Marchand, came under the fire of some Russian batteries which were on the right of the Alle; while at the same time the Russian cavalry charged Marchand in front. But now the Russian cavalry themselves were furiously attacked on their right flank by the cavalry of Bisson and Latour-Maubourg, and defeated with great slaughter.

Even then the 6th Corps was in a bad way, and some of its regiments were running short of ammunition, when Bagration, collecting all his strength, and summoning the reserve cavalry from the other side of the Mühlenfloss, came down on Ney with tremendous force. But just at this moment the division of Dupont struck at the Russian reserve cavalry; and with the assistance of Latour-Maubourg, not only defeated them but drove them back on their infantry, causing the most frightful disorder. Bagration was beaten. The French Artillery General, Senarmont, now brought up 36 guns and poured grape into the Russian masses at a distance of less than 300 yards.

On the Russian right, Gortchakoff tried to take the position of Heinrichs-dorf. He was defeated, but holding his ground. When he heard that his left was swept off the field, there was nothing left for him but retreat. But Lannes was on his flank; Mortier and Grouchy on his rear. He was driven into the river with terrific slaughter; he barely escaped to the other side with the wreck of his force, having lost all his guns.

The great battle was over. The French had lost 8,000 men; but the Russians had lost 25,000 men and 80 guns.

What was left of the Russian Army retired to Wehlau, destroying the bridges on the Pregel. On the 16th it reached Peters-dorf.

Königsberg was left to its fate, and Soult entered it without any opposition.

The Russians retired behind the Niemen on the 19th, and an armistice proposed on that day was signed on the 22nd.

June 22.

And here the campaign practically ended.

IX.

Some German military critics, and especially Hoffmann, say that in the operations of this campaign Napoleon displayed more systematic action than in any he had conducted up to the present. His care for his line of communications, the construction of dépôts, provision of reinforcements, special attention devoted to the mastering of the lines in the rear of his operations, all show that he was determined to leave nothing to chance.

We must note the special attention he paid to Thorn, then as now a most important strategic point. If this point had not been gained and guarded, his line of operations from Posen to Warsaw would have been unsafe, being exposed to a flank attack. If the Prussians had been able to get possession of Thorn, and were at the same time to operate from Danzig and Graudenz, he could not have attempted to advance to the Upper Vistula.

In this campaign, Napoleon's method of manœuvring with superior force is very instructive; his general plan being to advance his two wings, with a strong centre refused. These tactics he carried out very successfully again at the battle of Dresden, August, 1813.

The skill with which he recovered the initiative during the early part of June is very remarkable.

All through the campaign he tried to separate the Prussians from their allies, and this will account for certain movements of his which would seem otherwise difficult of explanation.

Some very able military critics blame him for not continuing the battle of Heilsberg on the 11th of June; while saying that he should not have fought the battle to begin with, they say that having begun it he should have made it a more complete victory. But the fact that he, on the 11th of June, manœuvred with his right instead of fighting is only proof that he was fully aware of the danger of his position; he also saw that he had no opportunity of striking hard just then, and he was anxious to economise his force so as to be in a position at the end to strike a decisive blow.

If Benningsen had not blundered so badly the Russians would have arrived safely on the Pregel; whilst Napoleon's line, already very much extended, would have been still further stretched. He had now reached a point when occupation of territory was of no further value to him, but rather the contrary, in such a poor district; so that a general action was the only object worth striving for. He knew this well; and he attained this object at Friedland; more, however, by good luck than by good management. Benningsen said

afterwards, by way of defending himself, that he had been misinformed with regard to Napoleon's movements on Königsberg. But even if this were so, the Russian Commander cannot escape the charge of neglecting to crush Lannes, as he had previously neglected to beat Ney at Guttstadt, and Soult at Heilsberg. Throughout the campaign he showed want of resolution and enterprise; and the essential elements of active defence were distinctly lacking on his part.

But there was no lack of resolution or enterprise on the other side; and Lannes' waiting action at Friedland is an excellent model for military commanders who find themselves in similar circumstances.

The French won the campaign because they had a leader whom they fully trusted; a leader who, above all things, knew his own mind, and who knew not only what to do but the best possible way to do it.

[Instead of giving a map of the theatre of operations I have endeavoured to give such directions as will enable a student of the campaign to draw maps for himself. — — —]

In studying this campaign I must acknowledge my obligations to the following authors: Thiers, Vial, Marbot, von Wartenberg, Kohlrausch, Hoeffner, Hoffmann, Becker, Major Adams, and Mr. Lorraine Petre. And I have also to thank Captain G. M. Orr, 11th K. E. O. Lancers, for some valuable notes compiled on the campaign.]

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The Czar and the King of Prussia were at Bayreuth. The Russian Army had been increased by 20,000 men. England had promised fresh subsidies, and the Austrians of a similar nature.

* *See map.*

† *See map, and also the map on page 242.*

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But Benningsen anticipated him, by moving out of his intrenched camp, with all his Army; and whilst, by means of demonstrations, he held in their respective positions the Corps of Bernadotte, Soult, and Davout, he directed the main strength of his forces on Marshal Ney, who, he thought, had pushed forward too far and was in an isolated position. But Ney did not allow himself to be overwhelmed by the Russian attack; so that Benningsen again gave up the offensive and retired to Heilsberg.

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June 9. On the night of the 9th, the following were the positions occupied by the French:—

Soult at Altkirch; Ney, Murat, and the Guard at Guttstadt; Davout holding the left bank of the Alle above Guttstadt, and Mortier approaching Guttstadt.

The Emperor made up his mind to fight a decisive battle on the very first opportunity, and thus finish the campaign; that is, if the Russians would only oblige him by letting him do so. He would then cut the Russian Army from Königsberg and its resources, and drive it across the Pregel.

On the 10th of June he prepared to attack Benningsen. Murat, Soult, Lannes, and Ney were to attack the Russians in front; Mortier and Davout were to

* Adams.

cut in between them and Königsberg, the Guard was in reserve. Victor was to hold the Prussians on the Lower Passarge, and save them from their allies. Murat and Soult attacked the Russians at Heilsberg, where a hard fought battle

June 10. took place, in which the Russians lost about 9,000 and the French 7,000 men. Napoleon has been blamed for fighting this battle. His critics say that he could have compelled the Russians to evacuate the position at a comparatively trifling loss if he had only moved the bulk of his Army round by the Russian left.

On the day after the battle, Benningsen, seeing that Davout was evidently trying to cut him off from

June 11. Königsberg, retreated up the right bank of the Alle, moving by Bartenstein and Schuppenbald. Napoleon sent his light cavalry to keep in touch with them, but he himself led the main body of his Army on Eylau, approaching Königsberg to place himself between the Russians and this town. He marched for

June 12. Demnan, which was two marches from Königsberg and one from Friedland. Here it was understood that the Russians were marching direct for Königsberg, so he despatched Soult and Murat to Kreuzburg, Lannes and Mortier to Demnan and Friedland. But next day he clearly saw that the Russians were marching on Friedland, so he ordered his Corps to push forward in this direction. The French right was formed by the Corps of Lannes, the centre under the Emperor himself consisted of the Corps of Mortier, Ney, Victor and Bernadotte's, and the Guard. On the left were the Corps of Saxe and Davout with the Reserve Cavalry under Murat moving on the road to Königsberg.

Benningsen had received orders to save Königsberg at all cost, so he threw several bridges across the Alle at Friedland, and passed from the right to the left bank. Then his advanced guard informed him that Lannes' Corps was isolated on the Friedland ridge, which had led him to make an attempt to overwhelm it. But Lannes by a series of cover and quick manoeuvres, made it appear that his force was much greater than it really was, which he sent special information to the Emperor, who at once hurried up with three Corps and the Guard.

The main mass of Lannes' Corps and the advanced guard were now on the left, the Russians gave chase to the main body of the French, but

June 13. came up and to begin the great battle of Friedland, on the afternoon of the 14th of June, the anniversary of Murat's death.

The main of Friedland is in the left bank of the Alle, a high hard of the river at the point where it flows into the Vistula on the north, from Königsberg to the S. He is a high ridge, north-west and south-east. The French were on the west, the Russian Army faced to the east. Eugene, on the right, took the ridge, the Prussian position was on the left, a very strong position.

Mühlenfloss, flowing from the west. Opposite Bagration were Ney and Victor; opposite the Russian centre was Lannes; Mortier faced Gortchakoff, and Grouchy's cavalry formed the French left.

Napoleon's plan of battle was to make Heinrichs-dorf a pivot for the movement of his whole Army, and to push forward his right in the direction of the river. Then to cut off the retreat of the Russians by seizing their lines of communication and their bridges across the Alle.

Benningsen's intention was, first of all, to overwhelm Lannes, and then to continue his retreat to Wehlau. But he had already lost his opportunity and also wasted valuable time. Then on the afternoon of the 14th, when he heard that he had the whole of the French Army in front of him, he thought it better not to fight that day at all, but to fall back under the cover of night. To carry out this he ordered his left to cross over to the right bank of the Alle; and just as this movement was commencing the French attacked him.

Between 4 and 5 o'clock in the afternoon Ney's Corps moved out from the direction of the forest of Sortlack (about 1½ miles south of Friedland) in echelon by regiments, right in front. Bagration at once drew back his left, and took up a position on a height south-west of Friedland, his left resting on the river. In too eagerly following up Bagration, Ney's right, commanded by Marchand, came under the fire of some Russian batteries which were on the right of the Alle; while at the same time the Russian cavalry charged Marchand in front. But now the Russian cavalry themselves were furiously attacked on their right flank by the cavalry of Bisson and Latour-Maubourg, and defeated with great slaughter.

Even then the 6th Corps was in a bad way, and some of its regiments were running short of ammunition, when Bagration, collecting all his strength, and summoning the reserve cavalry from the other side of the Mühlenfloss, came down on Ney with tremendous force. But just at this moment the division of Dupont struck at the Russian reserve cavalry; and with the assistance of Latour-Maubourg, not only defeated them but drove them back on their infantry, causing the most frightful disorder. Bagration was beaten. The French Artillery General, Senarmont, now brought up 36 guns and poured grape into the Russian masses at a distance of less than 300 yards.

On the Russian right, Gortchakoff tried to take the position of Heinrichs-dorf. He was defeated, but holding his ground. When he heard that his left was swept off the field, there was nothing left for him but retreat. But Lannes was on his flank; Mortier and Grouchy on his rear. He was driven into the river with terrific slaughter; he barely escaped to the other side with the wreck of his force, having lost all his guns.

The great battle was over. The French had lost 8,000 men; but the Russians had lost 25,000 men and 80 guns.

What was left of the Russian Army retired to Wehlau, destroying the bridges on the Pregel. On the 16th it reached Peters-dorf.

Königsberg was left to its fate, and Soult entered it without any opposition.

The Russians retired behind the Niemen on the 19th and an armistice proposed on that day was signed on the 22nd.

June 22

And here the campaign practically ended.

IX.

Some German military critics, and especially Hoffmann say that in the operations of this campaign Napoleon displayed more systematic action than in any he had conducted up to the present. His care for his line of communications, the construction of depôts, provision of reinforcements, special attention devoted to the mastering of the lines in the rear of his operations, all show that he was determined to leave nothing to chance.

We must note the special attention he paid to Thorn, then as now a most important strategic point. If this point had not been gained and guarded, his line of operations from Posen to Warsaw would have been unsafe, being exposed to a flank attack. If the Prussians had been able to get possession of Thorn, and were at the same time to operate from Danzig and Graudenz, he could not have attempted to advance to the Upper Vistula.

In this campaign, Napoleon's method of manoeuvring with superior force is very instructive, his general plan being to advance his two wings with a strong centre retused. These tactics he carried out very successfully again at the battle of Dresden, August, 1813.

The skill with which he recovered the initiative during the early part of June is very remarkable.

All through the campaign he tried to separate the Prussians from their allies, and this will account for certain movements of his which would seem otherwise of doubtful explanation.

Some very able military critics blame him for not continuing the battle of Heilsberg on the 11th of June, while saying that he should not have fought the battle to begin with, they say that having begun it he should have made it a more complete victory. But the fact that he on the 11th of June manoeuvred with his right instead of fighting in a position that he was fully aware of the danger of his position, he also saw that he had no opportunity of striking hard just then, and he was anxious to concentrate his force so as to be in a position at the end to strike a decisive blow.

If he had pushed on he might have surprised the Russians, who had have arrived safely on the Pręga, whilst Napoleon's army was very much exhausted. It would have been a further stroke of luck. He had no need to show a point when occupation of territory was the further object to him, but rather the contrary, in such a position, with a general action was the only one worth striving for. He knew this well, and he attended to it most at Friedland, not, however, by good luck, but by good planning. Clausewitz said

afterwards, by way of defending himself, that he had been misinformed with regard to Napoleon's movements on Königsberg. But even if this were so, the Russian Commander cannot escape the charge of neglecting to crush Lannes, as he had previously neglected to beat Ney at Guttstadt, and Soult at Heilsberg. Throughout the campaign he showed want of resolution and enterprise; and the essential elements of active defence were distinctly lacking on his part.

But there was no lack of resolution or enterprise on the other side; and Lannes' waiting action at Friedland is an excellent model for military commanders who find themselves in similar circumstances.

The French won the campaign because they had a leader whom they fully trusted; a leader who, above all things, knew his own mind, and who knew not only what to do but the best possible way to do it.

[Instead of giving a map of the theatre of operations I have endeavoured to give such directions as will enable a student of the campaign to draw maps for himself. — —]

In studying this campaign I must acknowledge my obligations to the following authors: Thiers, Vial, Marbot, von Wartenberg, Kohlrausch, Hoeffner, Hoffmann, Becker, Major Adams, and Mr. Loraine Petre. And I have also to thank Captain G. M. Orr, 11th K. E. O. Lancers, for some valuable notes compiled on the campaign.]

Over which the Gurkha Khud Race was run.
Continued 50 feet W. I.

C

Over which the Gurkha Khud Race was run.

Contours at Feet F. I.

Scale

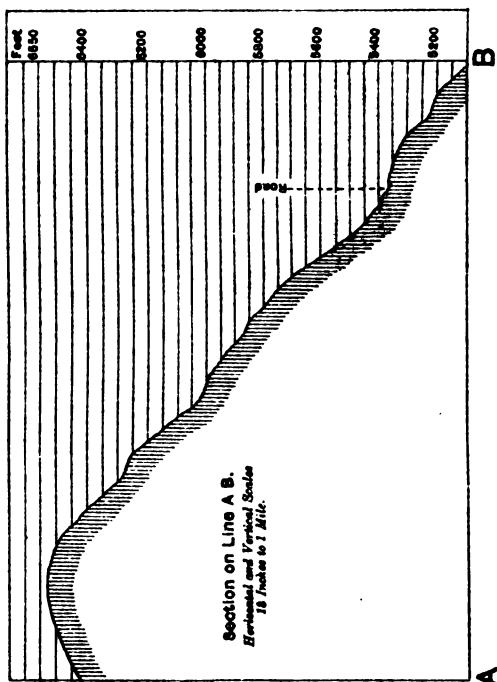


Photo-Mechi, and Litho. Dept., Thomason College, Roorkee.

Photo-Zinco, February, 1907.—No. 3536-2000



General View looking
N.-E. from the point M.



THE ANNUAL HILL RACE, FOR THE 5TH GURKHA CHALLENGE CUP, RUN AT RANIKHET.

BY MAJOR HON. C. G. BRUCE, M.V.O., 5TH GURKHA RIFLES.

The accompanying survey shows the course at Ranikhet over which the Annual Hill Race for the 5th Gurkha Challenge Cup was run this year, being the 12th competition. Hill racing was introduced at Abbottabad at the garrison sports of the year 1890, since which not a year has passed without several competitions taking place, the original object having been to find out during the preliminary trials the fastest movers across country with a view to employing them as messengers or scouts or for special work in which rapidity was essential. In 1891 two bodies of scouts were formed in the two battalions of the 5th Gurkhas almost entirely from men who had done well in the Hill Races and since then all hill runners have been given a chance as scouts. It is now possible to see whether any advantage or otherwise has accrued through the practice of this rather strenuous form of sport.

It has certainly conduced to a much higher mobility in all skirmishing and manœuvring, and further it has given the men themselves confidence in their own powers. Many people, however, have objected to hill racing as likely to strain the heart and certainly running up hill is a great strain: but any man who takes part in any athletic contest will probably damage himself unless sound and in good condition, and hill racing has this advantage over other forms of strenuous athletics in that, well before a man is run out, he must stop as he cannot see where to place his feet and would fall if he continued. At any rate, as far as the present writer knows, no harm has occurred to any sound man through hill running, in fact very much the opposite: two examples are worth quoting. The first, the winner of the first race run in Abbottabad in 1890 after running for 10 years for his battalion and taking part in many other contests, is still fit to beat any but the very best. The second belonging to another regiment took part in no less than 11 competitions for the Challenge Cup, six of which he won, and is now equally fit and sound.

This year the race was run over an easy and fairly long course and over ground where infantry and mountain artillery might have to manœuvre at any time. The difference in height from the start on the Ranikhet road to the highest point was 1430 feet approximately and was accomplished in 15 minutes 20 seconds; the whole course taking 24 minutes 45 seconds. The comparative slowness of the down hill is accounted for by the pace of the up hill. Probably the time could have been decreased by running the up hill a little slower; on this occasion, however, the winners knew that it was their best policy to tire their opponents in the up hill.

THE EXPERIENCE OF THE RUSSO-JAPANESE WAR.

(A PRÉCIS.)

BY CAPTAIN W. L. J. CAREY, R. A.

(*Journal des Sciences Militaires. July 1906.*)

THE ACTION OF CAVALRY.

The importance of cavalry has not lessened in modern war. But with the increased complication in the combat the arm of the gods requires even greater skill in handling than heretofore.

The length of the battles gives a wide field of action to the horse. If, on the 25th February, the mere cry "The Japanese cavalry are upon us" produced an extraordinary effect, what would have been the result had the cavalry really appeared.

That charges are still possible is proved by the Siberian cavalry charge at Wafangu, the Cossack attack on a Japanese battery, and the Japanese cavalry attack at Wenchenpu on the 21st February (6th March). The difficulty experienced in carrying out a charge shows that greater care is required in the choice of the right moment. Similarly most particular attention must be paid to preserving the secret of a raid.

Cavalry, which in case of need can cover 60 versts a day, and is not encumbered with luggage, will find plenty to do in the rear of modern armies. Infantry cannot stop it. The magazine rifle and the machine gun have augmented the power of resistance of mounted troops, and render them both more independent and more useful in many respects, *e.g.*, the ability to hold an important point until the infantry can come up, etc.

Reconnaissance work has become considerably more complicated. But the complication is not so much in the execution of the work as in its organisation. The result of a reconnaissance varies directly with the capabilities of its organiser. A clearly and precisely conceived task will produce a definite result, and *vice versa*. Good binoculars, preferably prism glasses, are most necessary. A large field of vision (with sufficient magnification) is the chief requisite.

In conclusion it may be said that the modern improvements in means of destruction are the things which have least affected cavalry action. The range of the rifle has increased, but the quality of glasses has also improved. The rapid firearm has rendered charges against infantry very dangerous, but, on the other hand, it prolongs the battle, and exhausts the infantry to such an extent that, if the moment is well chosen, the result of a massed cavalry attack will be decisive.

done under the orders of the general commanding the division, after a general reconnaissance of the position. It was nearly completed by the evening of the 24th September (7th October), when the orders from the army corps staff came in with the general plans. If the general plan of fortifications had been awaited all this time would have been lost.

The experience of this war shows that there is no time to await general schemes of fortification. Every commanding officer should be familiar with this branch of tactics. Engineers are a technical service, and should act as assistants to commanders of troops and realise the latter's ideas. Only the officer commanding the sector of ground can give a decision, he is responsible for everything and should not be hampered in any way.

When, however, a position is to be prepared before the troops arrive the case is different. But even then care should be taken to avoid doing anything which might afterwards hamper the commander of the troops in his dispositions. The works which should chiefly be carried out are such as do not affect the actual distribution of the troops in the position, such as—

1. Improvements in communications.
2. Improving the field of fire.
3. Organisation of tactical points of vantage.
4. Works with the object of preventing a turning movement.

In view of these ideas it is a necessity that commanders of troops should have an intimate acquaintance with the use of entrenchments.

PROFILES.

Trenches have become indispensable. All troops in the field, including even the reserves, as soon as they come within shrapnel range, must be sheltered in trenches. Sections of ground, in which bodies from the reserve are likely to be employed in the defensive against a turning movement, should be fortified. All ground likely to be used for defence against turning movements by the reserves should be put in a state of defence. All ground gained in the attack should be made good with the spade.

The smallest exposure to fire involves risk of such heavy loss that the position becomes untenable. On the other hand the lightest of trenches gives cover against shrapnel.

The most usual profile is that of the trench for a man standing. It gives excellent cover, and at the same time is very convenient for firing. The need for making the trench as invisible as possible leads to deepening as much as feasible and to keeping the parapet low. Experience has shown that a parapet 18 to 25 *c.m.* and even 35 *c.m.* high can be made practically invisible at 100 yards.

It is necessary to provide beforehand cover for all troops to be engaged, and therefore the works should be all carried out at the same time, including the cover on the flanks for the reserves.

Therefore supporting points should have the same profile as the trenches, and should be given the same number of men to a working.

party as will form the garrison. Otherwise in case of a premature attack the work could not shelter its working party. Moreover, with the power of modern arms an exterior ditch is even less a necessity than heretofore, and therefore the work to be done is less.

The essential point of the defence of a supporting point lies in covering the surrounding terrain between 700 and 150 yards from the firing line with a heavy fire. In this way the nerves of the garrison are not shaken and fire is better directed.

The visibility of the Russian works at long distances was the chief cause of the excellent practice made by the Japanese.

THE INSTRUCTION OF INFANTRY IN MAKING TRENCHES.

To know how to dig a trench is far from sufficient. The troops should know in addition how to utilise the trenches and how to organise the position. And this latter knowledge is far more difficult of acquisition than the mere method of excavating a trench. It is not a matter of plans and measurements but of carefully thought out solutions to tactical problems. The following are the chief points:

Preparatory work. This work is most essential, and should consist at first in enlarging the field of view of the officers, by making them solve interesting tactical problems dealing with large units and by causing them to study historical examples.

In this stage it should be made a rule that the instruction should not stop at the mere work, the logic of the facts should be entered into by an explanation of the reasons for every movement or order. In a word it is indispensable to carefully follow the thoughts of the responsible commander.

In solutions of tactical problems whenever the defence is concerned a complete study should be made of the defensive organisation of the positions.

In the infantry schools the study of organisation of positions on the map should be given with the same attention as tactical problems.

Practical measures. The study of organisation of positions should be made obligatory in the infantry. Inspections should always of the results being verified, as instruction in shooting and drill is verified, and the orders afterwards passed should show the inspecting officer's criticism.

This procedure will serve to impress upon the troops inspected that organisation of positions is an important branch of the military art, and will form a useful means of instructing the inspecting officer himself.

When troops are deployed or formed as a division with artillery it is essential to organise positions completely and to exercise men in the attack and defence of them. To show more clearly the advantages of defence, a series of small field firing against a position of troops should be arranged. The targets should correspond in dimensions and visibility to the targets which will be shown by reference in a trench. A few of the targets should be in the open. After the firing the men can be taken to work at the

targets. This method of procedure will contribute greatly to attract the attention of the soldier seriously to digging trenches, a task for which he has little liking in peace time.

"Unity of thought and will" in the organisation of positions will be obtained by instructing troops in this way to make intelligent use of trenches. A clear understanding of the end to be attained and a wide military instruction of the whole corps of officers, alone can ensure the unity of the operations both in preparation and execution.

The organisation of positions is an integral portion of the operations (preparation), and in consequence this truth is here equally applicable.

It now remains to define the relations between redoubts and trenches.

The strength of the defence lies in its fire. The power of the fire for a given rate of shooting is in direct proportion to the number of firers; the number of firers itself varies directly as the length of the firing line. The trench traced parallel to the front of the position best satisfies this last requirement.

A redoubt being in the form of a closed figure presumes from its very trace that it will be completely surrounded, or at least that it will be attacked on three sides. Only in such an event could all the rifles of the garrison be brought into play.

From these considerations the respective parts of trenches and redoubts are clearly apparent. The former are suitable for lines of riflemen, the latter for supporting reserves. Thus the latter constitute supporting points for the former (immovable reserves).

It follows that the most suitable positions for redoubts in the distribution of the troops for the battle are:—

1. In rear of the line of trenches, in case the enemy should pierce it. Their object is to place a limit to the enemy's success, and to allow the reserves to come up, in a word to endow the section with greater independence.

2. At points on the front when the field of fire is not good, and surprise attacks are possible on all sides or at least on several sides.

3. To secure the strategic and tactical keys of the position.

In all three cases the task is one of passive defence, to inflict the maximum possible loss on the enemy and to gain time, until the arrival of the reserves. This latter condition determines the strength of the redoubt (garrison, obstacles, blindages, etc.) The configuration of the ground determines the shape.

The 35th Division was guided by these principles in organising positions, and the combats in October 1904 on the Dalian-Linchinpu-Lamatun line have proved how well founded the principles were.

The violent attacks made by that iron soldier Oku's troops, in superior numbers, attacks which were particularly determined on the 1st and 2nd (14th and 15th) of October, were all shattered before our trenches for riflemen standing, which were protected by no material obstacles whatever (parapets mostly 15 to 25 c.m. high).

When on the 1st (14th) October, we had to evacuate the advanced trenches in consequence of being taken in flank and rear by fire, a redoubt with the same profile as the trenches, garrisoned by a single company, successfully resisted the Japanese attempts to take the evacuated trenches from the rear.

The arrangement of trenches was as follows. The first line—for the firing line—was made with intervals, a separate trench for each section, at about 30 to 50 yards from one another. Further to the rear at some 200 to 400 paces were trenches for half companies & companies, battalion reserve. Still further to the rear 500, 700, even 1,000 yards were redoubts for one or two companies. In every trench and redoubt there were traverses every 10 or 20 yards. This is a most important point, traverses were always used for protection against enfilade, the Japanese did the same. As far as the Russians could judge the Japanese positions were on the same principle.

Shelter for artillery.—When there was time gun pits were dug thus:—

A half circle, with its diameter parallel to the front, was described with a 2 yard radius. From a point 1 yard in rear of the centre point another semi-circle was described with a 4 yard radius. This area was excavated down to 70 *m.* On each side trenches for the gunners joined on 210 *m.* long and 120 *m.* deep. The excavated earth was not heaped up in front of the gun but used for the gunners' trenches.

BIVOUACS AND CANTONMENTS

The usual arrangement for halts of the enormous military mass is the bivouac. Even at Mukden a well-populated region, this was the case.

When the native population is not considered trustworthy, as was the case in Manchuria, the first duty of the staff officer who is choosing a halting place is to put sentries over the water supply. The next and most important task is to organise the water supply to prevent the boiling of the potable water.

The Russians as a rule adopted as a first precaution, as possible for bivouacs. But to fulfil in with the Russians soldiers looking for a hot tea the troops, though arranged as far as possible in the order in which they would be required the next day, were placed near the water allotted to them.

OUTPOSTS

For first line troops the usual outposts. For second line troops posts were put out at 2 to 2½ miles to the front and flanks. The strength was one section in the intervals of one company in the plains.

These posts occupy the villages and so we put them in a state of defence. They put out sentries with a couple of sentries for their security and to watch for the enemy. They are connected by paths. These latter are made by a zig-zag system of paths going to the next bivouac.

It is not expedient to drive the inhabitants out of the villages. Thanks to such precautions as these the 35th Division was never surprised.

Strong posts in localities which have been put in a state of defence are the best means of securing quiet and order in an alarm. They are able to stop the enemy, and to throw light on the real situation by forcing him to fight. These localities placed in a state of defence may also serve as points of support by day.

MARCHES.

There are few special points about these, but the following remarks were made.

It is advisable to tell off a company of infantry to each battery on the march. These companies then form a solid protection for the batteries, and march with them. Over and above this the company helps its battery out of difficulties. Delays due to guns sticking in the mud are minimised by the help of the infantrymen who are always at hand.

A reconnaissance of the road made beforehand is of enormous benefit. It is only in this way that the weak points of the road can be known, and working parties arranged for as required.

Baggage trains and convoys require special care. A preliminary reconnaissance of the road may be of great assistance in this regard.

RESERVES.

There is an idea nowadays that there is no necessity to have a reserve in a unit of the size of a company, nor even in a battalion. But the experience of the war does not support this view.

If there is no reserve, what gives the different units their independence of action? How can the inevitable eventualities of the combat be provided against—a break in the line, or a turning movement? How, lastly, will the commanding officer push on a party stopped by heavy loss? How will he reinforce a weakened firing line?

Even if it is permissible to deploy a whole company on the defensive, it is not so on the offensive.

Premature deployment merely increases the expenditure of ammunition unnecessarily, and makes control more difficult. Even the need for a powerful fire does not justify the deployment of a complete company. On the one hand the rifle is fairly rapid in firing, on the other hand a reserve enables support to be brought to a weak point. Therefore a reserve is as necessary for small units as for large.

(Journal des Sciences Militaires. October 1906.)

The fourth and last of this interesting series of articles is devoted chiefly to Mountain Warfare. The necessity for "picketing the heights" and various other familiar artifices appears to have been duly impressed upon the Russians. But excellent reading though it is, the article can hardly be said to throw any new light on the problems of mountain warfare as studied and practised in

India. The concluding remarks however which epitomise the lessons of the war as read by Russian experience are sufficiently noteworthy :—

1. The Russo-Japanese War has brought out in a trenchant manner the advantages of the offensive, as compared with the defensive, both in the domain of strategy and in that of tactics. The perfection of modern arms, giving greater strength to isolated detachments or sections of a position, has for that very reason increased the importance of seizing the initiative in operations.

2. The conduct of a battle has become more difficult. The need for personal action by subordinate commanders has increased. The chief commander only judges the situation from reports. The broadest preparation of commanders of every rank to understand the happenings of the battle, to act with intelligence in regard thereto, to judge clearly thereon and to make their decisions in accordance with events, is indispensable. A comprehension of the importance of accuracy in reports must be developed by instruction.

3. A more serious preparation of the soldier, from the standpoint of an intelligent and independent use of his rifle, is necessary.

4. The fate of battle, as heretofore, is decided by success at the decisive point, or in the decisive direction, by the concentration of superior forces to take the offensive in that direction. The means of obtaining it is, as formerly, the bringing into play of the reserves and the assault with the bayonet.

5. Fire remains a method of preparation.

6. For artillery, as before, the most complete success is obtained by concentration of fire. The technicalities of the arm have only changed the means of obtaining this concentration by giving up the mashing of batteries.

7. The complication of the combat necessitates special attention being paid to reconnaissance and observation.

8. The principles of the art of war have once more been confirmed in all respects. Every attempt to stray from them or to improvise, has resulted in punishment.

9. For that very reason the war has proved the necessity for sound instruction of commanders of every rank.

Success is the outcome of a well conceived plan.

Co-ordination of an operation or in a combat is only possible if all the component elements work together in a direction judiciously selected by them.

To reach this last condition it is necessary for every one to judge the situation in the same way and to appreciate it from the same viewpoint. The situation, operation or proposed combat. Only a well selected staff, having previously directed, can bring about this condition of seeing from a common standpoint.

Now this is no longer as easy as it appears. Military has never been so difficult as it is to-day, and to-day it is as unworkable as it ever was. It is no longer a question of the only thing which is the desire to attain the victory.

PRECIS OF FOREIGN MILITARY PAPERS

ITALIAN PAPERS.

BY CAPTAIN W. L. J. CAREY, R.A.

[The *Rivista di Artiglieria e Genio* for August, September and October is as usual mostly of a somewhat technical nature and not very suitable for reproduction. In fact probably the articles of most general interest are one in the September number on the question of shields for field artillery and one in the October number on the operations round Port Arthur, both of which are herein given.]

[*Rivista di Artiglieria e genio. September 1906.*]

Lessons of the Russo-Japanese War on the Advantages of Shields for Field Artillery.

Although the fact that most States have now adopted shields for their new field guns might be considered to have closed the question, it may be interesting to note the lessons of the Russo-Japanese War in this connection.

Both sides entered on the campaign without shields, but during the war some Russian batteries were furnished with improvised shields made of any material available, on the initiative of their own commanders. These shields therefore may be said to have received the stamp of war experience.

A number of opinions of distinguished Russian officers relating to this matter are in course of publication, and of these it is proposed to give extracts both for and against.

Colonel Slinsarenko after one month's experience in the field admitted that shields would be very useful. After another month he wrote "Shields are indispensable."

In a third letter, describing his own group of batteries at Mukden, he says that they filled their empty provision sacks with earth to make a shelter in place of the shields, and said it was preferable to do with four gunners and to let the Nos. 1 walk and use their horses (for the extra weight) than to do without shields. He also described how when the ground was frozen and shelters could not be excavated, the ammunition wagons were used to provide cover. Two wagons were placed in front of the gun which fired between them; or one used was on the flank to give shelter to the gunners. This arrangement, though not devoid of drawbacks, was successful in saving many lives.

General A. Nitscenko wrote equally explicitly in April 1905:—

"Before leaving Russia I hesitated to give a definite opinion. Now I am firmly convinced that guns should be provided with shields. A battery without them stands a good chance of losing all its gunners, even behind a crest, unless shelters have been dug.

FIELD WORKS.

The Russo-Japanese War, which on the Russian side was entirely defensive, is most instructive in regard to every description of field work. Profiles, from that for a rifle-man lying down to that for a semi-permanent work, the organisation of positions in every possible combination of circumstances, accessory obstacles of all kinds, everything in fact has undergone the test of actual fighting.

THE FUNDAMENTAL IDEA OF ORGANISING A POSITION

In all the Russian positions, which were fortified on a regular plan, *e.g.*, Mukden, Liaoyang, etc., there was invariably the same defect, that the general plan was that of a closed figure, an arrangement which rendered them liable beforehand to complete envelopment. Taking the first of those mentioned, Mukden, for example, it appears that the Mukden position consisted of three sections:—

1. A strong centre, with three lines of defence on the left bank of the Houn-ho from Ikhiantun to Kuntintun ;
2. The *left flank* along the right bank of the Houn-ho ; and
3. The works on the right flank.

Every work in these complicated defences was completed by September 1904 down to the blindages. And every work was perfectly adapted to its purpose. But as the battles of February and March showed, there was nothing to prevent a great turning movement from the west. And when the Russians retired, sullenly and with tears in their eyes, it was not because the murderous Japanese assaults had been successful, but because the communications with Harbin were being cut.

An echelon in rear of the right wing, say a few villages put in a state of defence, would have completely foiled the enveloping movement.

The lessons of these great battles are very clear. Frontal attacks entail such enormous losses that they can have no hope of success. On the other hand the strongest positions are useless if the assailant has the power to turn them. Positions with the wings exposed are very weak against turning movements. The only remedy is an echelon. The larger the number of troops engaged, the more important it is to assure the security of the flanks.

Technical services must be subordinate to the military authorities. The question arises, in the case of works in a fortified position, who should direct the scheme of fortification, the military or the specialists (engineers) ?

According to Russian regulations the control is entirely in the commanding engineer's hands. The experience of this war is just the contrary. For example:—

When the army of Manchuria started its offensive movement the 35th Division marched 19 versts on the 22nd September (6th October) to Siaokuchinpu, next it arrived at Sinchinpu, and started to fortify the Sinchinpu-Lamatun position (in which the 17th Corps afterwards checked Oku's march for three days). The work was

done under the orders of the general commanding the division, after a general reconnaissance of the position. It was nearly completed by the evening of the 24th September (7th October), when the orders from the army corps staff came in with the general plans. If the general plan of fortifications had been awaited all this time would have been lost.

The experience of this war shows that there is no time to await general schemes of fortification. Every commanding officer should be familiar with this branch of tactics. Engineers are a technical service, and should act as assistants to commanders of troops and realise the latter's ideas. Only the officer commanding the sector of ground can give a decision, he is responsible for everything and should not be hampered in any way.

When, however, a position is to be prepared before the troops arrive the case is different. But even then care should be taken to avoid doing anything which might afterwards hamper the commander of the troops in his dispositions. The works which should chiefly be carried out are such as do not affect the actual distribution of the troops in the position, such as—

1. Improvements in communications.
2. Improving the field of fire.
3. Organisation of tactical points of vantage.
4. Works with the object of preventing a turning movement.

In view of these ideas it is a necessity that commanders of troops should have an intimate acquaintance with the use of entrenchments.

PROFILES.

Trenches have become indispensable. All troops in the field, including even the reserves, as soon as they come within shrapnel range, must be sheltered in trenches. Sections of ground, in which bodies from the reserve are likely to be employed in the defensive against a turning movement, should be fortified. All ground likely to be used for defence against turning movements by the reserves should be put in a state of defence. All ground gained in the attack should be made good with the spade.

The smallest exposure to fire involves risk of such heavy loss that the position becomes untenable. On the other hand the lightest of trenches gives cover against shrapnel.

The most usual profile is that of the trench for a man standing. It gives excellent cover, and at the same time is very convenient for firing. The need for making the trench as invisible as possible leads to deepening as much as feasible and to keeping the parapet low. Experience has shown that a parapet 18 to 25 *c.m.* and even 35 *c.m.* high can be made practically invisible at 100 yards.

It is necessary to provide beforehand cover for all troops to be engaged, and therefore the works should be all carried out at the same time, including the cover on the flanks for the reserves.

Therefore supporting points should have the same profile as the trenches, and should be given the same number of men to a working.

party as will form the garrison. Otherwise in case of a premature attack the work could not shelter its working party. Moreover, with the power of modern arms an exterior ditch is even less a necessity than heretofore, and therefore the work to be done is less.

The essential point of the defence of a supporting point lies in covering the surrounding terrain between 700 and 150 yards from the firing line with a heavy fire. In this way the nerves of the garrison are not shaken and fire is better directed.

The visibility of the Russian works at long distances was the chief cause of the excellent practice made by the Japanese.

THE INSTRUCTION OF INFANTRY IN MAKING TRENCHES.

To know how to dig a trench is far from sufficient. The troops should know in addition how to utilise the trenches and how to organise the position. And this latter knowledge is far more difficult of acquisition than the mere method of excavating a trench. It is not a matter of plans and measurements, but of carefully thought out solutions to tactical problems. The following are the chief points:—

Preparatory work.—This work is most essential, and should consist at first in enlarging the field of view of the officers, by making them solve interesting tactical problems dealing with large units and by causing them to study historical examples.

In this stage it should be made a rule that the instruction should not stop at the mere work; the logic of the facts should be entered into by an explanation of the reasons for every movement or order. In a word it is indispensable to carefully follow the thoughts of the responsible commander.

In solutions of tactical problems whenever the defence is concerned, a complete study should be made of the defensive organisation of the positions.

In the military schools the study of organisation of positions on the maps should be given with the same attention as tactical problems.

Practical measures.—The study of organisation of positions should be made obligatory in the infantry. Inspections should allow of the results being verified, as instruction in shooting and drill is verified, and the orders afterwards passed should show the inspecting officer's criticism.

This procedure will serve to impress upon the troops inspected that organisation of positions is an indispensable branch of the military art, and will form a useful means of instructing the inspecting officer himself.

When troops are brigaded or formed as a division, with artillery, it is convenient to organise positions completely, and to exercise men in the attack and defence thereof. To show more clearly the advantages of entrenchments occasional field firing against a position may, if possible, be arranged. The targets should correspond in dimensions and visibility to the targets which would be shown by riflemen in a trench. A few of the targets should be in the open. After the firing the men can be taken to look at the

targets. This method of procedure will contribute greatly to attract the attention of the soldier seriously to digging trenches, a task for which he has little liking in peace time.

"Unity of thought and will" in the organisation of positions will be obtained by instructing troops in this way to make intelligent use of trenches. A clear understanding of the end to be attained and a wide military instruction of the whole corps of officers, alone can ensure the unity of the operations both in preparation and execution.

The organisation of positions is an integral portion of the operations (preparation), and in consequence this truth is here equally applicable.

It now remains to define the relations between redoubts and trenches.

The strength of the defence lies in its fire. The power of the fire for a given rate of shooting is in direct proportion to the number of firers; the number of firers itself varies directly as the length of the firing line. The trench traced parallel to the front of the position best satisfies this last requirement.

A redoubt being in the form of a closed figure presumes from its very trace that it will be completely surrounded, or at least that it will be attacked on three sides. Only in such an event could all the rifles of the garrison be brought into play.

From these considerations the respective parts of trenches and redoubts are clearly apparent. The former are suitable for lines of riflemen, the latter for supporting reserves. Thus the latter constitute supporting points for the former (immovable reserves).

It follows that the most suitable positions for redoubts in the distribution of the troops for the battle are:—

1. In rear of the line of trenches, in case the enemy should pierce it. Their object is to place a limit to the enemy's success, and to allow the reserves to come up, in a word to endow the section with greater independence.

2. At points on the front when the field of fire is not good, and surprise attacks are possible on all sides or at least on several sides.

3. To secure the strategic and tactical keys of the position.

In all three cases the task is one of passive defence, to inflict the maximum possible loss on the enemy and to gain time, until the arrival of the reserves. This latter condition determines the strength of the redoubt (garrison, obstacles, blindages, etc.) The configuration of the ground determines the shape.

The 35th Division was guided by these principles in organising positions, and the combats in October 1904 on the Dalian-Linchinpu-Lamatun line have proved how well founded the principles were.

The violent attacks made by that iron soldier Oku's troops, in superior numbers, attacks which were particularly determined on the 1st and 2nd (14th and 15th) of October, were all shattered before our trenches for riflemen standing, which were protected by no material obstacles whatever (parapets mostly 15 to 25 c.m. high).

When on the 1st (14th) October, we had to evacuate the advanced trenches in consequence of being taken in flank and rear by fire, a redoubt with the same profile as the trenches, garrisoned by a single company, successfully resisted the Japanese attempts to take the evacuated trenches from the rear.

The arrangement of trenches was as follows. The first line—for the firing line—was made with intervals, a separate trench for each section, at about 30 to 50 yards from one another. Further to the rear at some 200 to 400 paces were trenches for half companies or companies, battalion reserve. Still further to the rear 500, 700, even 1,000 yards were redoubts for one or two companies. In every trench and redoubt there were traverses every 10 or 20 yards. This is a most important point; traverses were always used for protection against enfilade: the Japanese did the same. As far as the Russians could judge the Japanese positions were on the same principle.

Shelter for artillery.—When there was time gun pits were dug thus:—

A half circle, with its diameter parallel to the front, was described with a 2 yard radius. From a point 1 yard in rear of the centre point another semi-circle was described with a 4 yard radius. This area was excavated down to 70 m. On each side trenches for the gunners joined on 2·10 m. long and 1·20 m. deep. The excavated earth was not heaped up in front of the gun but used for the gunners' trenches.

BIVOUECS AND CANTONMENTS.

The usual arrangement for halts of the enormous modern armies is the bivouac. Even at Mukden, a well populated region, this was the case.

When the native population is not considered trustworthy, as was the case in Manchuria, the first duty of the staff officer who is choosing a halting place is to put sentries over the water-supply. The next and most important task is to organise the water-supply, to prevent the fouling of the potable water.

The Russians as a rule adopted as close formations as possible for bivouacs. But to fall in with the Russian soldier's liking for his hot tea, the troops, though arranged as far as possible in the order in which they would be required the next day, were placed near the water allotted to them.

OUTPOSTS.

For first line troops the usual outposts. For second line troops posts were put out at 2 to 2½ miles to the front and flanks. The strength was one section in the mountains, and one company in the plains.

These posts occupy the villages and visit and put them in a state of defence. They put out sentries, and small piquets for their own security, and to watch important roads. They are connected by patrol. These latter also watch the villages to prevent signals being made by inhabitants.

It is not expedient to drive the inhabitants out of the villages.

Thanks to such precautions as these the 35th Division was never surprised.

Strong posts in localities which have been put in a state of defence are the best means of securing quiet and order in an alarm. They are able to stop the enemy, and to throw light on the real situation by forcing him to fight. These localities placed in a state of defence may also serve as points of support by day.

MARCHES.

There are few special points about these, but the following remarks were made.

It is advisable to tell off a company of infantry to each battery on the march. These companies then form a solid protection for the batteries, and march with them. Over and above this the company helps its battery out of difficulties. Delays due to guns sticking in the mud are minimised by the help of the infantrymen who are always at hand.

A reconnaissance of the road made beforehand is of enormous benefit. It is only in this way that the weak points of the road can be known, and working parties arranged for as required.

Baggage trains and convoys require special care. A preliminary reconnaissance of the road may be of great assistance in this regard.

RESERVES.

There is an idea nowadays that there is no necessity to have a reserve in a unit of the size of a company, nor even in a battalion. But the experience of the war does not support this view.

If there is no reserve, what gives the different units their independence of action? How can the inevitable eventualities of the combat be provided against—a break in the line, or a turning movement? How, lastly, will the commanding officer push on a party stopped by heavy loss? How will he reinforce a weakened firing line?

Even if it is permissible to deploy a whole company on the defensive, it is not so on the offensive.

Premature deployment merely increases the expenditure of ammunition unnecessarily, and makes control more difficult. Even the need for a powerful fire does not justify the deployment of a complete company. On the one hand the rifle is fairly rapid in firing, on the other hand a reserve enables support to be brought to a weak point. Therefore a reserve is as necessary for small units as for large.

(Journal des Sciences Militaires. October 1906.)

The fourth and last of this interesting series of articles is devoted chiefly to Mountain Warfare. The necessity for "picketing the heights" and various other familiar artifices appears to have been duly impressed upon the Russians. But excellent reading though it is, the article can hardly be said to throw any new light on the problems of mountain warfare as studied and practised in

India. The concluding remarks however which epitomise the lessons of the war as read by Russian experience are sufficiently noteworthy :—

1. The Russo-Japanese War has brought out in a trenchant manner the advantages of the offensive, as compared with the defensive, both in the domain of strategy and in that of tactics. The perfection of modern arms, giving greater strength to isolated detachments (or sections of a position), has for that very reason increased the importance of seizing the initiative in operations.

2. The conduct of a battle has become more difficult. The need for personal action by subordinate commanders has increased. The chief commander only judges the situation from reports. The broadest preparation of commanders of every rank to understand the happenings of the battle, to act with intelligence in regard thereto, to judge clearly thereon and to make their decisions in accordance with events, is indispensable. A comprehension of the importance of accuracy in reports must be developed by instruction.

3. A more serious preparation of the soldier, from the standpoint of an intelligent and independent use of his rifle, is necessary.

4. The fate of battle, as heretofore, is decided by success at the decisive point, or in the decisive direction, by the concentration of superior forces to take the offensive in that direction. The means of obtaining it is, as formerly, the bringing into play of the reserves and the assault with the bayonet.

5. Fire remains a method of preparation.

6. For artillery, as before, the most complete success is obtained by concentration of fire. The technicalities of the arm have only changed the means of obtaining this concentration by giving up the massing of batteries.

7. The complication of the combat necessitates special attention being paid to reconnaissance and observation.

8. The principles of the art of war have once more been confirmed in all respects. Every attempt to stray from them, or to improvise has resulted in punishment.

9. For that very reason the war has proved the necessity for scientific instruction of commanders of every rank.

Success is the outcome of a well conceived plan.

Co-ordination of an operation, or in a combat is only possible if all the component elements work together in a direction judiciously selected by them.

To realise this last condition it is necessary for every one to judge the situation in the same way, and to appreciate it from the same view-point of the scheme of operation, or proposed combat. Only a sound scientific training, judiciously directed, can bring about this method of seeing from a common stand-point.

Nowadays knowledge is easy of acquirement. Military history has studied all things, and has given all eventualities an accessible and comprehensible shape. The only thing lacking is the desire to assimilate seriously.

PRECIS OF FOREIGN MILITARY PAPERS

ITALIAN PAPERS.

BY CAPTAIN W. L. J. CAREY, R.A.

[The *Rivista di Artiglieria e Genio* for August, September and October is as usual mostly of a somewhat technical nature and not very suitable for reproduction. In fact probably the articles of most general interest are one in the September number on the question of shields for field artillery and one in the October number on the operations round Port Arthur, both of which are herein given.]

[*Rivista di Artiglieria e genio. September 1906.*]

Lessons of the Russo-Japanese War on the Advantages of Shields for Field Artillery.

Although the fact that most States have now adopted shields for their new field guns might be considered to have closed the question, it may be interesting to note the lessons of the Russo-Japanese War in this connection.

Both sides entered on the campaign without shields, but during the war some Russian batteries were furnished with improvised shields made of any material available, on the initiative of their own commanders. These shields therefore may be said to have received the stamp of war experience.

A number of opinions of distinguished Russian officers relating to this matter are in course of publication, and of these it is proposed to give extracts both for and against.

Colonel Slinsarenko after one month's experience in the field admitted that shields would be very useful. After another month he wrote "Shields are indispensable."

In a third letter, describing his own group of batteries at Mukden, he says that they filled their empty provision sacks with earth to make a shelter in place of the shields, and said it was preferable to do with four gunners and to let the Nos. 1 walk and use their horses (for the extra weight) than to do without shields. He also described how when the ground was frozen and shelters could not be excavated, the ammunition wagons were used to provide cover. Two wagons were placed in front of the gun which fired between them; or one used was on the flank to give shelter to the gunners. This arrangement, though not devoid of drawbacks, was successful in saving many lives.

General A. Nitscenko wrote equally explicitly in April 1905:—

"Before leaving Russia I hesitated to give a definite opinion. Now I am firmly convinced that guns should be provided with shields. A battery without them stands a good chance of losing all its gunners, even behind a crest, unless shelters have been dug.

At first my brigade suffered considerable losses; afterwards, when all the men had learnt from sad experience to construct trenches and blindages, the losses fell to zero.

"To save weight the shields ought to be so constructed that they can be used as seats for the gunners. The men should work kneeling or sitting so that the shields do not need to be large. Special shields are required for officers. I consider armoured protection necessary for wagons.

"A battery provided with shields and armoured wagons goes into action with calmness and a feeling of security even in the open."

Colonel Graviler, who had a very distinguished record in the war, records that in modern war batteries not infrequently must go into action in the open, and that in such cases the only method of avoiding heavy loss is to provide shields. Also that the men should work kneeling or sitting, and guns be spaced at 30 paces, while if possible shelter trenches should be constructed in addition for the detachments.

The opinion of Colonel K. V. Lemiker on the other hand is diametrically opposed to these. At Wafangu he was with the 4th Battalion of the 1st Siberian Rifle Brigade which sustained a terrible fire from the Japanese artillery.

He asserts that in his view the experience of war indicates that the principal means of defence against an enemy—apart of course from firing at him—is to be concealed from his sight. And he considers that all fortification in the future will be on these lines, so that a fortress will have nothing in relief to attract the besieger's attention. He says:—

"A battery in the open will be rather more conspicuous with shields than without. Once fairly ranged in by the enemy, the latter will very soon reduce it to a condition of impotence. And moreover concentrated fire with percussion shell will destroy the shields.

"The shields do not shelter the whole battery but only a few of the detachments, whereas the most important point is covered communications. The lack of such between guns and wagons cannot fail to have a bad effect on the men.

"A battery with shields will probably take longer to get into action than one without, because the wagons must come up with the guns.

"It would be preferable to abandon the idea of shields in favour of a larger proportion of shell, which form the most efficacious means of defence to artillery."

Lieutenant-Colonel Lemiker's views merit consideration inasmuch as he was present throughout the campaign. But, as already stated, the majority of Russian artillery officers who took part in the war are in favour of shields. In several batteries in fact shields were improvised, or other means of protection adopted.

Lieutenant-Colonel Kuriak's battery, which manufactured shields, testifies to the excellent results thereof. On one occasion the

battery was under the fire of three Japanese artillery brigades for 13 hours. It was said that the shrapnel bullets sounded like hail on the metal shields. At first the men made small shelter trenches, but later, gaining confidence in the shields, returned to the guns. The losses were small, five wounded of whom only two were among the detachments working the guns. While on its part the battery dispersed two columns of infantry and inflicted severe loss on a Japanese battery. On another occasion the Japanese attacked this battery with torpedo shell, but the improvised shields withstood the fire successfully, there being no losses and the shields not being pierced. On several other occasions the battery was in a critical position, as for instance once when attacked in front and flank by artillery and infantry and again when enfiladed by 12 Japanese guns. Again in a duel with some riflemen on a hill the battery compelled the latter to withdraw. The shields were not perforated. This battery's experience therefore is a very striking confirmation of the favourable opinion of the majority in the shield question.

[*Rivista di Artiglieria e Genio. October 1906.*]

The Operations round Port Arthur in 1904. Three Lectures by Captain L. Giantrappani of the Italian Artillery.

A SHORT DESCRIPTION OF THE FORTRESS AND SOME NOTES ON THE FORCES OF THE BELLIGERENTS.

1. *The harbour.*—Port Arthur is situated at the south-west extremity of the Liautung Peninsula, which extremity forms the smaller peninsula of Kuantung, and is joined to the larger by the isthmus of Nanshan. The southern side of the rocky Kuantung coast is broken by the entrance to a spacious natural harbour surrounded by steep hills. The excellent military situation of the port commanding the communications with the Yellow Sea is rendered more important still by the fact that the harbour is always ice free, a condition which does not invariably hold good even in more southerly harbours, in the Far East. The harbour is connected with the sea by a passage some 300 or 400 yards wide and 900 long. Although much had been done to improve it at the opening of the war in February 1904, this passage was not yet in a condition to permit vessels of war to pass with facility, so that it took some three days for the Russian fleet to put out to sea. There is a large basin with docks, etc., on the eastern side. On the west there is a wide shallow bay, dry at low tide. South comes the torpedo station in a smaller basin.

The centre of the harbour is a large sheet of water of great depth which forms the main anchorage for large ships. It apparently, however, did not furnish sufficient space for the whole fleet as several vessels had always to be kept at Vladivostock (in spite of its being ice-bound in winter). The canal joins these "internal roads"

with the "external roads." In the latter there is excellent anchorage for any number of vessels, but there is no protection to the east and south.

2. *The surrounding country.*—All round the inner harbour there is a circle of hills on which the works forming the land front of the fortress have been constructed. These are divided into two groups by a deep valley. Through this valley runs the Lun-ho stream which rises to the north in the Wolf Mountains, and flows into the inner harbour; and this is also the route for the railway, the water-supply and the main roads to the fortress.

The eastern group of hills "Dragon Mountains" is the higher and runs from the coast north-east to this valley. There are two concentric series of heights; the inner, consisting of the Great Hill, Danger Hill and Aquila's Nest, all from $1\frac{1}{2}$ to 2 kilometers from the old city; and the outer some $3\frac{1}{2}$ to 4 kilometers away. The latter are very steep with deep ravines. These latter hills run down to the Ta-ho bank with wide terraces forming dead angles in the main position. Further in advance are the Sakushan and Takushan hills which command the Dragon Chain in their immediate rear. Towards the north the hills descend steeply to the hollow in which lie the villages of Palitshung and Shushing beyond which again rise the remarkable heights of the "Mountains of the Wolf".

The old Chinese city lies between the inner line of the "Dragon Chain" and the harbour. To the west of the valley of the Lun-ho and north of the new Russian city lies the so-called "Table Mountain" group. This is, however, commanded to the north, north-west and west by a line of hills forming an angle with its vertex 3 kilometres from the "Table Mountain" and closing in to the south and north. These hills, the highest point of which (210 metres) is quite close to the well known "203 Metre Hill," command the hills aforementioned, and also the low-lying land down to the Linsa and Columba bays; moreover the city and inner harbour are visible from the peaks. The principal fortifications are on the 210 metre, 203 metre and Namako Jama hills.

Another uneven line of hills to the south runs round the western basin of the harbour down the Tiger Peninsula to the east. And lastly at the south end of the Kuantung Peninsula lies the heavy mass of the Laotishan Hill, some 1,500 feet in height.

This belt of hills round Port Arthur is itself surrounded by a depression, from the Ta-ho on the east, to Columba Bay, and the fort of Lastishan Hill on the west.

The whole peninsula is similarly covered with low hills, bare and rocky, deeply furrowed with ditches and ravines, and separated by deep valleys which are fairly well populated and cultivated. Trees are rare, and villages small, mere hamlets in fact except in the larger valleys. All communications are extremely bad and the roads are impassable in the rainy season. The sole exception is the Mandarin road from Kinchu. This was much improved by the Russians.

DEFENSIVE ORGANISATION OF THE SEA FRONT.

This front has a length of some 8 kilometres from the Tiger Peninsula on the west of the entrance to the inner harbour round to the east of the said entrance. At the beginning of the war there had been 18 works, which were afterwards increased to 22.

These works were for the most part high site batteries at over 300 feet. This enabled them to effectively command the outer harbour and the entrance to the canal, a fact which was abundantly proved by the success of the fire from these batteries in holding the Japanese fleet at a distance. Moreover, the high sites rendered the batteries safe from the fire of ships, showing once again that in a duel between ships and land forts the latter always have the advantage. This was the more remarkable in that the Japanese guns ranged further than the Russian. There were also a few batteries on low sites, mostly constructed during the war, with the object of firing on ships which, owing to the deep water inshore, could get into dead angles under the high sited guns.

The Russians numbered the batteries 1 to 22 from west to east. Of these 9 were permanent works with concrete casemates, 9 were field altered into permanent works during the war, and 4 were not built at the opening of hostilities. The majority were armed with 15 centimetre and heavier guns and had a field of fire towards either the land or sea.

The whole sea front was divided into three distinct groups—Peninsula, Golden Hill, and Cross Mountain.

The first group consisted of Nos. 1 to 10 batteries and was armed with heavy and medium guns for the defence of the sea from Cape Laotishan to Cape Laomushu, and with light guns in low level batteries for repelling landings and torpedo boat attacks. The Golden Hill group (Nos. 12 to 18) had the general defence of the sea front, together with the reverse face of the land front. No. 15 battery dealt with the dead angles of No. 1 group. Nos. 12 and 14 being armed with light guns defended the entrance to the harbour and No. 18 fired over the inshore water. The Cross Hill group (Nos. 19 to 22) defended Tache Bay, and lastly No. 11, which was not assigned to any group, defended the entrance to the harbour and covered the reverse of the land face.

The field of fire seawards was limited by the Laoshan promontory, and as a result the enemy's ships were able to harass the fortress with indirect fire from the west. At first there were no works on the Laoshan Hill, but it was soon found necessary to mount guns. The difficult nature of the soil and the rocky precipitous sides of the hill, however, prevented more than one battery of 15 centimetre guns being mounted.

The central power station was placed under the "Electric School" battery.

The permanent works were strengthened by free use of concrete. The strongest part of the front was the Golden Hill group of forts,

which appear to have been all connected by a concrete parapet, and arranged with much care to guard against enfilade.

The armament was naturally very varied. In the Tiger group batteries Nos. 6 and 7 had 4 howitzers of 28 centimetres and 8 mortars of 23 centimetres respectively; Nos. 4 and 8 had 23 centimetre howitzers; Nos. 2, 5 and 9 had 15 centimetre Canet guns, and the remainder had 7.5 centimetres or 5.7 centimetre guns.

In the Golden Hill group the central battery had 28 centimetre howitzers, and the two flank batteries 5.7 centimetre Q.-F. guns. No. 15, the "Electricity School" battery, had 5 guns of 25 centimetres. The high sited No. 17 battery had 23 centimetre mortars and No. 16 had 15 centimetre guns, while No. 18 had 7.5 centimetre guns.

Three of the Cross Hill batteries were armed with Q.-F. 23 centimetre mortars, while two had 15 centimetre Canet guns.

To sum up, the main armament consisted of 23 and 28 centimetre mortars, of which there were 32 and 10 respectively. There were 5 guns of 25 centimetres, 10 of 23 centimetres (old pattern), and 33 of 15 centimetres (of which 15 were of the best Canet Q.-F. type). The 25 centimetre guns in the "Electricity School" battery ranged to some 15 kilometres. The 15 centimetre Canet guns had a range of 12.5 kilometres, and the 28 centimetre howitzers 8.5 kilometres.

The batteries usually consisted of 4 guns, mounted *en barbette* without any protection, except in the "Electricity School" battery where shields were provided.

THE LAND FRONT.

In 1884 the Chinese constructed strengthened field works on the Dragon Chain and Table Mountain, but these were practically destroyed by the Japanese in 1895. When the Russians took over Port Arthur in 1898, a scheme was evolved which comprised a line of fortifications, including these old works, of some 74 kilometres in length and mounting about 528 guns with a garrison of 70,000 men. The line of works was to take in the Wolf Mountains and other outer heights. However, for want of troops and money and because it was not seriously believed that the fortress would be attacked the scheme was reduced to a 22 kilometre line of fortifications. The Chinese works were utilised, but no attention was paid to the fact that the heights on which they were situated were all commanded by the outer hills.

The complete scheme comprised 6 large permanent forts, 5 works with open gorges, a *ceinture* and some minor works. Also a large fort was to have been built at Nanshan. This, however, fell through for financial reasons, and the want of this fort proved to be a great drawback. About 15 million roubles was granted for the whole scheme, of which about 4 had been spent by 1904. It is interesting to note that at the same time 10 millions were devoted to the new Russian city of Port Arthur, and 50 to the Port of Dalny, which afterwards formed such an excellent base for the Japanese troops.

The general line of defences ran along the Dragon Chain, Table Mountain and the southerly hills to the Tiger Peninsula. Outside this was another line of advanced defence, mostly groups of field works, running along the left bank of the Ta-ho, round Shoosang and the hills which cover the Table Mountain. Each group of works consisted as a rule of a central permanent work situated at some specially important tactical point, and flanking works for close quarters, and for covering dead angles, or to defend important points in the ground in front. These latter were usually connected by infantry trenches or obstacles or both, and in the intervals or in any place of importance, other batteries were built during the siege. Generally speaking the line of defence was much broken owing to the nature of the ground, and admitting the tactical and technical value of the works the whole plan has one vital defect, *i.e.*, that the works are placed too near and too directly in front of the city and the inner harbour. The result was that these latter were in no way safe from fire although the forts were so powerful.

The following are the chief types of works:—

1. Forts of a permanent nature capable of great passive resistance and armed with medium ordnance.
2. Infantry works of light profile but with casemates of concrete and generally built like permanent works.
3. Infantry redoubts of a temporary character.
4. Permanent batteries.
5. Batteries in the intervals built during mobilisation.

As will be understood from the description already given, the country divides naturally into two parts, separated by the valley of the Lun-ho. But the Russians divided the line of defence into three sections, east, north and west.

The eastern section comprises the works on the Dragon Chain and reaches as far as the valley of the Ta-ho, the northern includes the fortifications on the same hills extending north to the Palitshuang and Shooshing depression, while to the western section belong the works west of the Lun-ho. These may now be examined as they existed at the beginning of the siege, that is at the beginning of June 1904.

1. *Eastern section.*—This section was strong both by nature and art, and rested on the sea front to the south (Cross Hill batteries), while to the north it was bounded by a battery. It was composed of various groups of works, with a number of supporting points, which were easily provided on the broken ground of the hills. The steep slopes also formed a formidable obstacle to frontal attacks. A species of breastwork closed all intervals.

At the beginning of the war Fort I and two permanent batteries (all armed with 15 centimetre guns) were completed; two field works and some 2nd line works were in course of being transferred into semi-permanent works. All the work was much behind hand at the opening of hostilities, but every effort was made to complete these and other works before the siege. To this section

also belonged the breastwork intended to protect the old city against an assault.

2. *Northern section.*—This extended for over 5 miles nearly to the railway, on account of the line of approach to Port Arthur and the fact that the Wolf Mountains commanded this front, the latter came directly in the line of the attacker's advance, and the Japanese for the second time choose it for the main attack.

In this section are the Erlung and Kikan groups of works. Of these the permanent forts III and II and one work were completed before the war began.

Some Chinese works were utilised and the 2nd line position at Aquila's Nest was ready. This latter consisted of a powerful position on a knoll armed with 4 modern mortars of 23 centimetres, 2 naval 19 centimetre guns and 2 15 centimetre guns. These batteries gave the Japanese much trouble and being well covered were never damaged. Afterwards advanced works were built at the head of the Lan-ho valley to cover the water-supply, etc. Also a battery was built to bar the Lun-ho.

3. *Western section.*—This ran along a 13 mile front from the redoubt on the White Wolf Hill to the sea front on the south. It included the works on the Roisan and Table Mountain heights. In June 1904 the following were ready:—

Fort (permanent) No. IV, one battery (permanent), two works Nos. 4 and 5 and permanent batteries C and G (which also covered the northern face).

Certain other works were hastily completed during mobilisation and in the siege itself. These eventually formed an advanced line connected by infantry trenches.

The works in this section had an area of fire over Colomba Bay, but were not powerful enough to prevent the enemy's ships from bombarding the city and the harbour from that bay. The works on Table Mountain were powerful, but their value was much discounted by the fact of their being commanded from Loinshu.

NOTE ON THE ARMAMENT AND FORTIFICATIONS OF THE LAND FRONT.

The large permanent forts were usually of an antiquated type on an irregular trapezoidal trace, with a low parapet for infantry and high parapet for medium ordnance. Kikuan provides an instance of an infantry work and Erlung of a fort for medium guns.

All guns were mounted *en barbette*, without turrets or armoured protection of any kind. Consequently the detachments had no shelter, and the guns in the forts could not remain in action for any long period. The high parapets had to be occupied by infantry supported by machine guns.

There were a number of bomb-proof shelters in which free use of concrete was the rule. But in one or two cases considerations of economy were allowed too great weight, with fatal results. It was in one such shelter that General Kontratenko, the soul of the

PRECIS OF FOREIGN MILITARY PAPERS

ITALIAN PAPERS.

BY CAPTAIN W. L. J. CAREY, R.A.

[The *Rivista di Artiglieria e Genio* for August, September and October is as usual mostly of a somewhat technical nature and not very suitable for reproduction. In fact probably the articles of most general interest are one in the September number on the question of shields for field artillery and one in the October number on the operations round Port Arthur, both of which are herein given.]

[*Rivista di Artiglieria e genio. September 1906.*]

Lessons of the Russo-Japanese War on the Advantages of Shields for Field Artillery.

Although the fact that most States have now adopted shields for their new field guns might be considered to have closed the question, it may be interesting to note the lessons of the Russo-Japanese War in this connection.

Both sides entered on the campaign without shields, but during the war some Russian batteries were furnished with improvised shields made of any material available, on the initiative of their own commanders. These shields therefore may be said to have received the stamp of war experience.

A number of opinions of distinguished Russian officers relating to this matter are in course of publication, and of these it is proposed to give extracts both for and against.

Colonel Slinsarenko after one month's experience in the field admitted that shields would be very useful. After another month he wrote "Shields are indispensable."

In a third letter, describing his own group of batteries at Mukden, he says that they filled their empty provision sacks with earth to make a shelter in place of the shields, and said it was preferable to do with four gunners and to let the Nos. 1 walk and use their horses (for the extra weight) than to do without shields. He also described how when the ground was frozen and shelters could not be excavated, the ammunition wagons were used to provide cover. Two wagons were placed in front of the gun which fired between them; or one used was on the flank to give shelter to the gunners. This arrangement, though not devoid of drawbacks, was successful in saving many lives.

General A. Nitscenko wrote equally explicitly in April 1905:—

"Before leaving Russia I hesitated to give a definite opinion. Now I am firmly convinced that guns should be provided with shields. A battery without them stands a good chance of losing all its gunners, even behind a crest, unless shelters have been dug.

At first my brigade suffered considerable losses, afterwards when all the men had learnt from sad experience to construct trenches and blindages, the losses fell to zero.

"To save weight the shields ought to be so constructed that they can be used as seats for the gunners. The men should work kneeling or sitting so that the shields do not need to be large. Special shields are required for officers. I consider armoured protection necessary for wagons.

"A battery provided with shields and armoured wagons goes into action with calmness and a feeling of security even in the open.

Colonel Grayner, who had a very distinguished record in the war, records that in modern war batteries not infrequently must go into action in the open and that in such cases the only method of avoiding heavy losses is to provide shields. Also that the men should work kneeling or sitting and guns be spaced at 50 paces while if possible shorter trenches should be constructed in advance for the detachments.

The opinion of Colonel K. V. Lankov on the other hand is diametrically opposed to these. At Wladimir he was with the 4th Battalion of the 1st Siberian Rifle Brigade which sustained a terrific fire from the Japanese artillery.

He asserts that in his view the experience of war indicates that the principal means of defence against an enemy—apart of course from firing at him—is to be concealed from his sight. And he considers that all fortification in the future will be on these lines, so that a fortress will have nothing in itself to attract the besieger's attention. He says:

"A battery in the open will be rather more conspicuous with shields than without. Once fairly ranged in by the enemy the latter will very soon reduce it to a condition of impotence. And moreover concentrated fire with percussion shells will destroy the shields.

"The shields do not shelter the whole battery but only a few of the detachments, whereas the most important point is covered by machine guns. The lack of such defence organs and wagons cannot fail to have a bad effect on the men.

"A battery with shields will probably take longer to get into action than one without, because the wagons must come up with the guns.

It would be proper to mention here that the Russian favour of a large proportion of the army being in the "open" is a means adopted to conserve space.

The Russian Colonel Lankov also says that in the Russo-Japanese war he was present at the capture of the Japanese position at Wladimir. He says very fully stated the necessity of the use of the shields and that a large part of the war was fought in the open. The Russian Colonel also states that the shields were of great service in the capture of the Japanese position at Wladimir.

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battery was under the fire of three Japanese artillery brigades for 13 hours. It was said that the shrapnel bullets sounded like hail on the metal shields. At first the men made small shelter trenches, but later, gaining confidence in the shields, returned to the guns. The losses were small, five wounded of whom only two were among the detachments working the guns. While on its part the battery dispersed two columns of infantry and inflicted severe loss on a Japanese battery. On another occasion the Japanese attacked this battery with torpedo shell, but the improvised shields withstood the fire successfully, there being no losses and the shields not being pierced. On several other occasions the battery was in a critical position, as for instance once when attacked in front and flank by artillery and infantry and again when enfiladed by 12 Japanese guns. Again in a duel with some riflemen on a hill the battery compelled the latter to withdraw. The shields were not perforated. This battery's experience therefore is a very striking confirmation of the favourable opinion of the majority in the shield question.

[*Rivista di Artiglieria e Genio*. October 1906.]

The Operations round Port Arthur in 1904. Three Lectures by Captain L. Giantrappani of the Italian Artillery.

A SHORT DESCRIPTION OF THE FORTRESS AND SOME NOTES ON THE FORCES OF THE BELLIGERENTS.

1. *The harbour*.—Port Arthur is situated at the south-west extremity of the Liaotung Peninsula, which extremity forms the smaller peninsula of Kuantung, and is joined to the larger by the isthmus of Nanshan. The southern side of the rocky Kuantung coast is broken by the entrance to a spacious natural harbour surrounded by steep hills. The excellent military situation of the port commanding the communications with the Yellow Sea is rendered more important still by the fact that the harbour is always ice free, a condition which does not invariably hold good even in more southerly harbours, in the Far East. The harbour is connected with the sea by a passage some 300 or 400 yards wide and 900 long. Although much had been done to improve it at the opening of the war in February 1904, this passage was not yet in a condition to permit vessels of war to pass with facility, so that it took some three days for the Russian fleet to put out to sea. There is a large basin with docks, etc., on the eastern side. On the west there is a wide shallow bay, dry at low tide. South comes the torpedo station in a smaller basin.

The centre of the harbour is a large sheet of water of great depth which forms the main anchorage for large ships. It apparently, however, did not furnish sufficient space for the whole fleet as several vessels had always to be kept at Vladivostock (in spite of its being ice-bound in winter). The canal joins these "internal roads"

with the "external roads." In the latter there is excellent anchorage for any number of vessels, but there is no protection to the east and south.

2. *The surrounding country* : All round the inner harbour there is a circle of hills on which the works forming the land front of the fortress have been constructed. These are divided into two groups by a deep valley. Through this valley runs the Lun to stream which rises to the north in the Wolf Mountains, and flows into the inner harbour; and this is also the route for the railway, the water-supply and the main roads to the fortress.

The eastern group of hills "Dragon Mountains" is the higher and runs from the coast north-east to this valley. There are two concentric series of heights; the inner, consisting of the Great Hill, Danger Hill and Aquila's Nest, all from 1½ to 2 kilometers from the old city, and the outer some 3½ to 4 kilometers away. The latter are very steep with deep ravines. These latter hills run down to the Tâ ho bank with wide terraces forming dead angles in the main position. Further in advance are the Saksushan and Takushan hills which command the Dragon Chan in their immediate rear. Towards the north the hills descend steeply to the hollow in which lie the villages of Pail'shung and Shushing beyond which again rise the remarkable heights of the "Mountains of the Wolf."

The old Chinese city lies between the inner line of the "Dragon Chan" and the harbour. To the west of the valley of the Lun to and north of the new Russian city lies the so-called "Tâ ho Mountain" group. This is, however, commanded to the north, north-west and west by a line of hills forming an angle with its vertex 3 kilometers from the "Tâ ho Mountain" and closing in to the south and north. These hills the highest point of which 210 metres is quite close to the well known "203 Metre Hill" command the line aforementioned and also the low lying land down to the Lamsa and Columbia bays; moreover the city and inner harbour are visible from the peaks. The principal fortifications are on the 210 metre, 204 metre and Namak Junch hills.

Another uneven line of hills to the south runs round the western basin of the harbour down the Tiger Peninsula to the east. And lastly at the south end of the Kuangtung Peninsula lies the heavy mass of the Lashan Hill some 1500 feet in height.

The whole of the land round Port Arthur is itself surrounded by a depression from the Tâ ho on the east to Columbia Bay and the foot of Lashan Hill on the west.

The whole peninsula is generally covered with low hills, bare and rocky, deeply furrowed with gullies and ravines, and separated by deep valleys with fertile valleys well populated and cultivated. Trees are rare at low levels, but more abundant in the higher valleys. All the mountains are extremely bad and the roads are impossible in the rainy season. The sole exception is the Mukden road from Kiaofoo. This was much improved by the Russians.

DEFENSIVE ORGANISATION OF THE SEA FRONT.

This front has a length of some 8 kilometres from the Tiger Peninsula on the west of the entrance to the inner harbour round to the east of the said entrance. At the beginning of the war there had been 18 works, which were afterwards increased to 22.

These works were for the most part high site batteries at over 300 feet. This enabled them to effectively command the outer harbour and the entrance to the canal, a fact which was abundantly proved by the success of the fire from these batteries in holding the Japanese fleet at a distance. Moreover, the high sites rendered the batteries safe from the fire of ships, showing once again that in a duel between ships and land forts the latter always have the advantage. This was the more remarkable in that the Japanese guns ranged further than the Russian. There were also a few batteries on low sites, mostly constructed during the war, with the object of firing on ships which, owing to the deep water inshore, could get into dead angles under the high sited guns.

The Russians numbered the batteries 1 to 22 from west to east. Of these 9 were permanent works with concrete casemates, 9 were field altered into permanent works during the war, and 4 were not built at the opening of hostilities. The majority were armed with 15 centimetre and heavier guns and had a field of fire towards either the land or sea.

The whole sea front was divided into three distinct groups—Peninsula, Golden Hill, and Cross Mountain.

The first group consisted of Nos. 1 to 10 batteries and was armed with heavy and medium guns for the defence of the sea from Cape Laotishan to Cape Laomushu, and with light guns in low level batteries for repelling landings and torpedo boat attacks. The Golden Hill group (Nos. 12 to 18) had the general defence of the sea front, together with the reverse face of the land front. No. 15 battery dealt with the dead angles of No. 1 group. Nos. 12 and 14 being armed with light guns defended the entrance to the harbour and No. 18 fired over the inshore water. The Cross Hill group (Nos. 19 to 22) defended Tache Bay, and lastly No. 11, which was not assigned to any group, defended the entrance to the harbour and covered the reverse of the land face.

The field of fire seawards was limited by the Laoshan promontory, and as a result the enemy's ships were able to harass the fortress with indirect fire from the west. At first there were no works on the Laoshan Hill, but it was soon found necessary to mount guns. The difficult nature of the soil and the rocky precipitous sides of the hill, however, prevented more than one battery of 15 centimetre guns being mounted.

The central power station was placed under the "Electric School" battery.

The permanent works were strengthened by free use of concrete. The strongest part of the front was the Golden Hill group of forts,

which appear to have been all connected by a concrete parapet and arranged with much care to guard against enfilade.

The armament was naturally very varied. In the Tiger group batteries Nos. 6 and 7 had 4 howitzers of 28 centimetres and 15 mortars of 23 centimetres respectively; Nos. 4 and 8 had 23 centimetre howitzers; Nos. 2, 5 and 9 had 15 centimetre Canet guns; and the remainder had 7.5 centimetres or 5.7 centimetre guns.

In the Golden Hill group the central battery had 28 centimetre howitzers, and the two flank batteries 5.7 centimetre Q. F. guns. No. 15, the "Electricity School" battery, had 5 guns of 25 centimetres. The high sited No. 17 battery had 23 centimetre mortars and No. 16 had 15 centimetre guns, while No. 18 had 7.5 centimetre guns.

Three of the Cross Hill batteries were armed with Q. F. 25 centimetre mortars, while two had 15 centimetre Canet guns.

To sum up the main armament consisted of 23 and 28 centimetre mortars, of which there were 32 and 10 respectively. There were 5 guns of 25 centimetres, 10 of 23 centimetres, and pattern and 33 of 15 centimetres (of which 15 were of the best Canet Q. F. type). The 25 centimetre guns in the "Electricity School" battery ranged to some 15 kilometres. The 15 centimetre Canet guns had a range of 12.5 kilometres, and the 28 centimetre howitzers 8.5 kilometres.

The batteries usually consisted of 4 guns, mounted *en barbette* without any protection except in the "Electricity School" battery where shields were provided.

THE LAND FRONT.

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The complete scheme comprised five permanent forts 5 metres with opening guns, 15 *entrenchments* and 15 semi-permanent works. A sea battery was to have been built at Naustan. This however, due to the great financial distress, and the want of time, did not proceed to be a great drawback. About 150000 men were granted for the work, which was completed in 4 years and completed by 1904. It is interesting to note that of the 50000 men 10000 were devoted to the garrison of Port Arthur, and 5000 to Port of Dairen, while the remainder were distributed along the coast between the Japanese troops.

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As will be understood from the description already given, the country divides naturally into two parts, separated by the valley of the Lun-ho. But the Russians divided the line of defence into three sections, east, north and west.

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1. *Eastern section.*—This section was strong both by nature and art, and rested on the sea front to the south (Cross Hill batteries), while to the north it was bounded by a battery. It was composed of various groups of works, with a number of supporting points, which were easily provided on the broken ground of the hills. The steep slopes also formed a formidable obstacle to frontal attacks. A species of breastwork closed all intervals.

At the beginning of the war Fort I and two permanent batteries (all armed with 15 centimetre guns) were completed; two field works and some 2nd line works were in course of being transferred into semi-permanent works. All the work was much behind hand at the opening of hostilities, but every effort was made to complete these and other works before the siege. To this section

defence, was killed. The idea was that the Japanese would use no guns over 15 centimetres—a sad miscalculation.

Many works were cut in the solid rock, an arrangement which gave excellent cover and proved a great obstacle to mines. Draw-bridges were employed in the forts. Escarps and counterscarps built before the siege were in concrete. The ditches were usually flanked by a caponier, also of concrete. Covered communications had been constructed throughout, so that even a heavy bombardment interfered but little with the work in the forts.

Works with open gorges were on the same plan, but the ditches were on three sides only. Even mere batteries had splinter proofs of concrete. The semi-permanent works were also of a powerful nature: some were in very rocky ground, cover being provided out of the solid rock, or masses of concrete were used with vertical scarps to deep ditches.

But, generally speaking, everything was more or less unfinished at the beginning of the siege, the concrete being only in a few cases covered with earth. And there were but few magazine and bomb proof stores for explosives.

The riflemen's trenches at first employed gave insufficient protection against artillery fire, so new ones were constructed with a 45 centimetre parapet and a 1 to 1.25 metre ditch, slopes as steep as possible, and strengthened with fascines, etc. Communicating trenches were deep enough to cover a man standing. Furthermore the men dug pits for their feet and sat in these trenches thus gaining complete protection.

The armament of the fortress was utterly inadequate to suit modern requirements. The main armament consisted of 15 centimetre guns, some indeed of Canet type, but the majority of older patterns. There were only 4 really powerful pieces, *viz.*, 4 mortars of 23 centimetres in Aquila's Nest. After these came the 10.7 centimetre and lighter ordnance and the machine guns. To these must be added a few guns taken from the ships and mounted in improvised batteries. Of these latter there were 2 of 19 centimetre, a few of 15 and 12 centimetre and some 50 lighter guns.

Thus the total number of medium guns on the land front of Port Arthur during the siege may be put at 120. In addition there were some 200 light guns and the field batteries. There was also considerable difficulty in moving ordnance about owing to the bad ground and the lack of heavy draught horses, so that there were no means of concentrating guns at any desired point in the very extended line of the defence. This deficiency of medium ordnance which usually constitute the backbone of the defence was a marked weakness in the land front. It also prevented the possibility of maintaining a reserve under the chief commander, a factor of the defence which might almost be called indispensable in a modern fortress. The weakness in guns was so great that after the surrender the Japanese even discovered muzzle-loading guns in position, relics of Chinese days which had been brought out to replace guns put out of action.

Examination into details reveals the weakness of the armament more clearly. For instance in the section chiefly attacked (the northern) there were only 25, 15 centimetre or heavier ordnance and 15 of these were howitzers or mortars. Among the latter the only modern pieces were the 4 mortars of 23 centimetre in Aquida's Nest the others being old pattern howitzers or 15 centimetre field mortars so that on this important front there was practically only one battery which was able to hold its own with the enemy.

The smaller calibre ordnance comprised a considerable number of Q F. 57, 47 and 37 *mm.* guns, naval 75 *mm.* guns for the most part located in the caponiers and flanking works for short range fighting together with the machine guns which last were used with excellent effect. There were also 7 Q F. field batteries with 76 *mm.* guns.

The heavy guns were mounted both in the intervals between the main forts and in the forts themselves, which appears to show that the principles of fortification cannot be considered absolute but must vary with the terrain. The reason here was probably the difficulty already referred to which was experienced in moving heavy ordnance. The distribution of guns in the works varied considerably. For instance the Japanese on taking Erlung found 4 medium guns, 7 field and about 30 smaller guns, varying from 37 *mm.* to naval 75 calibre. This is a striking instance of the preponderance of light ordnance and machine guns which was a universal rule, and doubtless contributed largely to the invariable failure of the Japanese assaults.

As regards ammunition the provision was far below the necessities of the fortress. The heavy guns on the sea front had a very limited equipment while the 15 centimetre ordnance on the land front were only allowed 300 rounds a gun. On the theory that the equipment of fortress guns should be from 1000 to 1500 rounds per piece the inadequacy is sufficiently evident.

By a fortunate stroke of luck two train loads of ammunition were brought in at the last minute. But the straits to which the Russians were reduced may be gathered from the fact that before the end of the siege old Chinese projectiles, drill shell and even unexploded Japanese shells were employed.

In August 1904 when the last hope of a relief had disappeared orders were given to conserve ammunition, and by November the 15 centimetre guns seldom fired more than 5 or 6 rounds a day. When the war ended it took place there were only 100 of these 15 centimetre shells left.

The want of fuses was specially felt so much so that even ancient Chinese fuses were used with the result that 3 out of 4 rounds were blank. In fact the variety of material which constituted the equipment of Port Arthur may well have justified what the Russian "General" who was in the siege and characterised it as a "useless and very costly affair" did in saying.

"Even so there was no hope of stopping the attack, having been expected, and all attempts to neutralise the guns by the firing of shells having failed. But on the other hand the war had not been a merely

successful. There were 9 to begin with, and afterwards some from the ships were brought ashore. The projectors were 90 centimetre and 170 centimetre. The power was derived from dynamos driven by steam engines or petrol motors located inside the forts. The installations, which were but indifferently protected, suffered considerably from the enemy's fire, and in the last days of the siege were totally destroyed, showing that a well protected central power station is desirable.

THE MOBILE TROOPS IN THE FORTRESS.

The command of the whole troops in the Kuantung Peninsula lay in the hands of General Stossel, A.-D.-C. to the Czar, and commander of the III Siberian Corps, a man of 56, ill-fitted for a siege, but of an energetic disposition. With him were Major-General Smirnoff, Commanding the fortress of Port Arthur, General Nikitine, commanding the artillery of the fortress, and Generals of Division Forek and Kondratenko commanding the 4th and the 7th East Siberian Rifle Divisions respectively.

This last Division formed the garrison proper of Port Arthur, and its commander General Kondratenko, a talented and brave officer who was killed in the last days of the siege, was looked upon by the Russian officers as the real soul of the defence. The 4th Rifle Division was charged with the duty of the advanced lines of defence and terrain in front of the fortress, while to the 7th fell the fortifications.

The Rifle Divisions had the usual organisation, *viz.*, 2 infantry brigades of 2 regiments (each of 3 battalions) and the 4th Rifle Division had in addition the 5th rifle regiment (of the 2nd Division) and an artillery brigade of 4 batteries. The 7th Division had one 3 battery brigade. There were also the 3rd battalion of Sappers, the Kuantung Sapper Company and a sotnia of Cossacks and some minor details. The mobile troops in the fortress not counting local corps and special services were as follows:—

30 battalions of rifles and infantry.

7 field batteries.

5 companies of engineers.

The fortress troops under General Smirnow were:—

3 battalions of fortress artillery.

1 mobile (sortie) battery.

1 Q.-F. 57 mm. battery.

1 engineer fortress company.

1 company of fortress miners.

1 fortress telegraph detachment.

The total of the troops at Port Arthur at the end of May comes to about 38,000 men, 28,000 of whom were infantry. Taking into account the 10,000 men of the fleet and the 5,000 belonging to the administration services, the strength of the troops in the fortress may be put at 53,000 men.

which appear to have been all connected by a concrete parapet, and arranged with much care to guard against enfilade.

The armament was naturally very varied. In the Tiger group batteries Nos. 6 and 7 had 4 howitzers of 28 centimetres and 5 mortars of 23 centimetres respectively; Nos. 4 and 8 had 23 centimetre howitzers; Nos. 2, 5 and 9 had 15 centimetre Canet guns and the remainder had 7.5 centimetres or 5.7 centimetre guns.

In the Golden Hill group the central battery had 28 centimetre howitzers, and the two flank batteries 5.7 centimetre Q. F. guns. No. 15, the "Electricity School" battery, had 5 guns of 25 centimetres. The high sited No. 17 battery had 23 centimetre mortars and No. 16 had 15 centimetre guns, while No. 18 had 7.5 centimetre guns.

Three of the Cross Hill batteries were armed with Q. F. 25 centimetre mortars, while two had 15 centimetre Canet guns.

To sum up the main armament consisted of 23 and 28 centimetre mortars, of which there were 32 and 10 respectively. There were 5 guns of 25 centimetres, 10 of 23 centimetres, old pattern, and 33 of 15 centimetres (of which 15 were of the best Canet Q. F. type). The 25 centimetre guns in the "Electricity School" battery ranged to some 15 kilometres. The 15 centimetre Canet guns had a range of 12.5 kilometres, and the 28 centimetre howitzers 8.5 kilometres.

The batteries usually consisted of 4 guns, mounted on *barbettes* without any protection except in the "Electricity School" battery where shields were provided.

THE LAND FRONT

In 1884 the Chinese constructed strengthened field works on the Dragon Chain and Tiger Mountain, but these were practically destroyed by the Japanese in 1895. When the Russians took Port Arthur in 1898, a scheme was evolved which comprised a line of fortifications, including these old works, of some 7.4 kilometres in length and mounting about 528 guns with a garrison of 70,000 men. The line of works was to take in the Wolf Mountains and other high heights. However, for want of troops and money, and because it was not seriously believed that the fortress would be attacked from the sea, was reduced to a 2.2 kilometre line of fortifications. The Chinese works were not used, but no attention was paid to the fortifications, the guns in which they were situated were all dismantled by the Japanese.

The complete scheme comprised large permanent forts 5 miles with perimeters of concrete and some minor works. A scheme of fort was to have been built at Narsim. This, however, for the lack of funds, and the want of this fort proved to be a great drawback. About 15,000 men were given for the land scheme, of which only 4,000 had been spent by 1894. It is interesting to note that at the same time 10,000 men were devoted to the sea defences of Port Arthur, and 50,000 to the Port of Dairen, which was considered to be a base for the Japanese troops.

The general line of defences ran along the Dragon Chain, Table Mountain and the southerly hills to the Tiger Peninsula. Outside this was another line of advanced defence, mostly groups of field works, running along the left bank of the Ta-ho, round Shoosang and the hills which cover the Table Mountain. Each group of works consisted as a rule of a central permanent work situated at some specially important tactical point, and flanking works for close quarters, and for covering dead angles, or to defend important points in the ground in front. These latter were usually connected by infantry trenches or obstacles or both, and in the intervals or in any place of importance, other batteries were built during the siege. Generally speaking the line of defence was much broken owing to the nature of the ground, and admitting the tactical and technical value of the works the whole plan has one vital defect, *i.e.*, that the works are placed too near and too directly in front of the city and the inner harbour. The result was that these latter were in no way safe from fire although the forts were so powerful.

The following are the chief types of works:—

1. Forts of a permanent nature capable of great passive resistance and armed with medium ordnance.
2. Infantry works of light profile but with casemates of concrete and generally built like permanent works.
3. Infantry redoubts of a temporary character.
4. Permanent batteries.
5. Batteries in the intervals built during mobilisation.

As will be understood from the description already given, the country divides naturally into two parts, separated by the valley of the Lun-ho. But the Russians divided the line of defence into three sections, east, north and west.

The eastern section comprises the works on the Dragon Chain and reaches as far as the valley of the Ta-ho, the northern includes the fortifications on the same hills extending north to the Palitshuang and Shooshing depression, while to the western section belong the works west of the Lun-ho. These may now be examined as they existed at the beginning of the siege, that is at the beginning of June 1904.

1. *Eastern section.*—This section was strong both by nature and art, and rested on the sea front to the south (Cross Hill batteries), while to the north it was bounded by a battery. It was composed of various groups of works, with a number of supporting points, which were easily provided on the broken ground of the hills. The steep slopes also formed a formidable obstacle to frontal attacks. A species of breastwork closed all intervals.

At the beginning of the war Fort I and two permanent batteries (all armed with 15 centimetre guns) were completed; two field works and some 2nd line works were in course of being transferred into semi-permanent works. All the work was much behind hand at the opening of hostilities, but every effort was made to complete these and other works before the siege. To this section

also belonged the breastwork intended to protect the old city against an assault.

2. *Northern section*.—This extended for over 5 miles nearly to the railway, on account of the line of approach to Port Arthur and the fact that the Wolf Mountains commanded this front, the latter came directly in the line of the attacker's advance, and the Japanese for the second time choose it for the main attack.

In this section are the Erlung and Kikan groups of works. Of these the permanent forts III and II and one work were completed before the war began.

Some Chinese works were utilised and the 2nd line position at Aquila's Nest was ready. This latter consisted of a powerful position on a knoll armed with 4 modern mortars of 23 centimetres, 2 naval 19 centimetre guns and 2 15 centimetre guns. These batteries gave the Japanese much trouble and being well covered were never damaged. Afterwards advanced works were built at the head of the Lan-ho valley to cover the water-supply, etc. Also a battery was built to bar the Lun-ho.

3. *Western section*.—This ran along a 13 mile front from the redoubt on the White Wolf Hill to the sea front on the south. It included the works on the Roiusan and Table Mountain heights. In June 1904 the following were ready:—

Fort (permanent) No. IV, one battery (permanent), two works Nos. 4 and 5 and permanent batteries C and G (which also covered the northern face).

Certain other works were hastily completed during mobilisation and in the siege itself. These eventually formed an advanced line connected by infantry trenches.

The works in this section had an area of fire over Colomba Bay, but were not powerful enough to prevent the enemy's ships from bombarding the city and the harbour from that bay. The works on Table Mountain were powerful, but their value was much discounted by the fact of their being commanded from Loinshu.

NOTE ON THE ARMAMENT AND FORTIFICATIONS OF THE LAND FRONT.

The large permanent forts were usually of an antiquated type on an irregular trapezoidal trace, with a low parapet for infantry and high parapet for medium ordnance. Kikuan provides an instance of an infantry work and Erlung of a fort for medium guns.

All guns were mounted *en barbette*, without turrets or armoured protection of any kind. Consequently the detachments had no shelter, and the guns in the forts could not remain in action for any long period. The high parapets had to be occupied by infantry supported by machine guns.

There were a number of bomb-proof shelters in which free use of concrete was the rule. But in one or two cases considerations of economy were allowed too great weight, with fatal results. It was in one such shelter that General Kontratenko, the soul of the

defence, was killed. The idea was that the Japanese would use no guns over 15 centimetres—a sad miscalculation.

Many works were cut in the solid rock, an arrangement which gave excellent cover and proved a great obstacle to mines. Draw-bridges were employed in the forts. Escarps and counterscarps built before the siege were in concrete. The ditches were usually flanked by a caponier, also of concrete. Covered communications had been constructed throughout, so that even a heavy bombardment interfered but little with the work in the forts.

Works with open gorges were on the same plan, but the ditches were on three sides only. Even mere batteries had splinter proofs of concrete. The semi-permanent works were also of a powerful nature: some were in very rocky ground, cover being provided out of the solid rock, or masses of concrete were used with vertical scarps to deep ditches.

But, generally speaking, everything was more or less unfinished at the beginning of the siege, the concrete being only in a few cases covered with earth. And there were but few magazine and bomb proof stores for explosives.

The riflemen's trenches at first employed gave insufficient protection against artillery fire, so new ones were constructed with a 45 centimetre parapet and a 1 to 1·25 *metre* ditch, slopes as steep as possible, and strengthened with fascines, etc. Communicating trenches were deep enough to cover a man standing. Furthermore the men dug pits for their feet and sat in these trenches thus gaining complete protection.

The armament of the fortress was utterly inadequate to suit modern requirements. The main armament consisted of 15 centimetre guns, some indeed of Canet type, but the majority of older patterns. There were only 4 really powerful pieces, *viz.*, 4 mortars of 23 centimetres in Aquila's Nest. After these came the 10·7 centimetre and lighter ordnance and the machine guns. To these must be added a few guns taken from the ships and mounted in improvised batteries. Of these latter there were 2 of 19 centimetre, a few of 15 and 12 centimetre and some 50 lighter guns.

Thus the total number of medium guns on the land front of Port Arthur during the siege may be put at 120. In addition there were some 200 light guns and the field batteries. There was also considerable difficulty in moving ordnance about owing to the bad ground and the lack of heavy draught horses, so that there were no means of concentrating guns at any desired point in the very extended line of the defence. This deficiency of medium ordnance which usually constitute the backbone of the defence was a marked weakness in the land front. It also prevented the possibility of maintaining a reserve under the chief commander, a factor of the defence which might almost be called indispensable in a modern fortress. The weakness in guns was so great that after the surrender the Japanese even discovered muzzle-loading guns in position, relics of Chinese days which had been brought out to replace guns put out of action.

Examination into details reveals the weakness of the armament more clearly. For instance in the section chiefly attacked, the northern there were only 25, 15 centimetre or heavier ordnance, and 15 of these were howitzers or mortars. Among the latter the only modern pieces were the 4 mortars of 23 centimetre in Aquila's Nest the others being old pattern howitzers or 15 centimetre field mortars to that on this important front there was practically only one battery which was able to hold its own with the enemy.

The smaller calibre ordnance comprised a considerable number of Q.F. 57, 47 and 37 *mm.* guns, naval 75 *mm.* guns for the most part located in the caponniers and flanking works for short range fighting together with the machine guns which last were used with excellent effect. There were also 7 Q.F. field batteries with 76 *mm.* guns.

The heavy guns were mounted both in the intervals between the main forts and in the forts themselves which appears to show that the principles of fortification cannot be considered absolute but must vary with the terrain. The reason here was probably the difficulty already referred to which was experienced in moving heavy ordnance. The distribution of guns in the works varied considerably. For instance the Japanese on taking Erlung found 4 medium guns, 7 field and about 50 smaller guns, varying from 37 *mm.* to machine calibre. This is a striking instance of the preponderance of light ordnance and machine guns which was a universal rule, and doubtless contributed largely to the invariable failure of the Japanese assaults.

As regards ammunition the provision was far below the necessities of the fortress. The heavy guns on the sea front had a very limited equipment while the 15 centimetre ordnance on the land front were only allowed 300 rounds a gun. On the theory that the equipment of fortress guns should be from 1000 to 1500 rounds per piece the inadequacy is sufficiently evident.

By a fortunate stroke of luck two train loads of ammunition were brought in at the last minute. But the straits to which the Russians were reduced may be gathered from the fact that before the end of the siege old Chinese projectiles, drill shell and even unexploded Japanese shells were employed.

In August 1904 when the last hope of relief had disappeared orders were given to commence ammunition and by November the 15 centimetre guns were fired more than 5 or 6 rounds a day. When the war ended in lack power there were only 100 of these 15 centimetre shells left.

The want of fuses was specially felt, so much so in fact that ancient Chinese fuses were used with the result that 3 out of 4 rounds were lost. In fact the variety of material which constituted the equipment of Port Arthur may well have justified a Russian official who was at the siege in characterising it as a museum of every relic of human warfare.

By instance were the ships bringing the stores having been captured, and the supplies from the Russians to the fortress having failed. But neither threatened the sea nor the goods were of any great

successful. There were 9 to begin with, and afterwards some from the ships were brought ashore. The projectors were 90 centimetre and 170 centimetre. The power was derived from dynamos driven by steam engines or petrol motors located inside the forts. The installations, which were but indifferently protected, suffered considerably from the enemy's fire, and in the last days of the siege were totally destroyed, showing that a well protected central power station is desirable.

THE MOBILE TROOPS IN THE FORTRESS.

The command of the whole troops in the Kuantung Peninsula lay in the hands of General Stossel, A.-D.-C. to the Czar, and commander of the III Siberian Corps, a man of 56, ill-fitted for a siege, but of an energetic disposition. With him were Major-General Smirnoff, Commanding the fortress of Port Arthur, General Nikitine, commanding the artillery of the fortress, and Generals of Division Forek and Kondratenko commanding the 4th and the 7th East Siberian Rifle Divisions respectively.

This last Division formed the garrison proper of Port Arthur, and its commander General Kondratenko, a talented and brave officer who was killed in the last days of the siege, was looked upon by the Russian officers as the real soul of the defence. The 4th Rifle Division was charged with the duty of the advanced lines of defence and terrain in front of the fortress, while to the 7th fell the fortifications.

The Rifle Divisions had the usual organisation, *viz.*, 2 infantry brigades of 2 regiments (each of 3 battalions) and the 4th Rifle Division had in addition the 5th rifle regiment (of the 2nd Division) and an artillery brigade of 4 batteries. The 7th Division had one 3 battery brigade. There were also the 3rd battalion of Sappers, the Kuantung Sapper Company and a sotnia of Cossacks and some minor details. The mobile troops in the fortress not counting local corps and special services were as follows:—

- 30 battalions of rifles and infantry.
- 7 field batteries.
- 5 companies of engineers.

The fortress troops under General Smirnow were:—

- 3 battalions of fortress artillery.
- 1 mobile (sortie) battery.
- 1 Q.-F. 57 mm. battery.
- 1 engineer fortress company.
- 1 company of fortress miners.
- 1 fortress telegraph detachment.

The total of the troops at Port Arthur at the end of May comes to about 38,000 men, 28,000 of whom were infantry. Taking into account the 10,000 men of the fleet and the 5,000 belonging to the administration services, the strength of the troops in the fortress may be put at 53,000 men.

The Chinese workmen all fled at the beginning of the war so field works, etc., were constructed by the troops under the direction of engineer officers.

THE JAPANESE BESIEGING ARMY AND ITS SIEGE PARK

Although the first operations against Port Arthur took place on the night of the 8th February before war was declared, the investment was not begun till June, when the III Army Corps was disembarked at Dalny and organised as the besieging force.

This Army Corps consisted of 3 Divisions—the 1st, 9th, and 11th—each of 12 battalions, with 2 machine-guns apiece, 3 squadrons, 6 batteries and 3 sapper companies. There were in addition an independent field artillery brigade (12 batteries) and a regiment of siege artillery for the siege ordnance. Afterwards 3 mixed reserve brigades were added, so that the besieging troops reached a total of 70,000 men, always kept up to strength by reinforcements from the mother country. Further a whole division was added towards the end of the siege by the 7th Division being sent to Port Arthur. This brought the numbers up to 80,000 men. The sea base was the port of Dalny, a large and excellent port built by the Russians at great expense, and connected with Port Arthur and Manchuria by lines of rail. It was occupied by the Japanese soon after the battle of Nanshan on the 30th May.

The Commander in Chief of the besieging army was General Baron Nogi, a descendant of an ancient and noble Samurai race, and well known for his energy of character. In 1902 he was 55 years of age. The loss of both his sons in the course of the siege did not impair the strength of character of which he was generally shown such striking proof on the field of Mukden.

The Japanese siege park developed during the siege, but even at the end it was far from possessing all the requisites of a modern siege train, either in the numbers or in the nature of the ordnance which it contained. At the start there were over a hundred pieces of cannon and heavy field-guns. The main armament consisted of 15 centimetre howitzers (16) and about 50 guns and howitzers of 12 centimetres, the latter forming the heavy field artillery, and there were also 15 and 9 centimetre mortars and 107 centimetre guns. Of these were available for use about 30 heavy guns of 11, 12, and 13 centimetres and 60 mortars of various antiquated types. The most powerful guns available, 2 heavy 15 centimetre guns, were found to be incapable of destroying the Russian fortifications. Consequently 18 coast howitzers of 28 centimetres were sent over from Japan. These were mounted on the main siege park having been built at the Osaka Arsenal, and the remainder at Mukden. Of the heavy field artillery 11 pieces of 12 centimetres and 10 of 13 centimetres were available. The 15 centimetre howitzers were 16 in number, and the 9 centimetre guns of 15 pieces. The 24 centimetre coast batteries were 10 in number, and the 12 centimetre field batteries 10 in number.

As therefore the assailant's artillery was far from being equal to the functions demanded of it either in the numbers or in the power of the guns the failure to make adequate preparation for infantry attacks can be readily understood. Even the heavy 28 centimetre shells were originally intended exclusively for naval warfare and therefore produced but relatively small effect on the masses of concrete in the modern type works. The want of a shell of the heavy 20 centimetre high explosive type was severely felt. In addition to this the number of 12 to 15 centimetre guns which form the main armament of a siege train was far below the figure now considered necessary for the attack of an important fortress.

Perhaps the recollection of the success obtained by the Japanese infantry in 1892 in the assault on Port Arthur under the Chinese, and also failure to appreciate at their true value the Russian fortifications, may have obscured the judgment of the Japanese authorities in their preparations, when considering the importance of the part to be played by artillery. And as a matter of fact the system of assaults by infantry, under which the earlier stages of the siege were conducted, showed clearly that General Nogi placed his chief reliance on that arm, while the failure of the said assaults, owing to insufficient artillery preparation, gave striking evidence of the necessity for an adequate use of the latter.

RUSSIAN PAPERS.

BY CAPTAIN G. S. PALMER, 95TH INFANTRY.

"VOYENNI SBOENIK."

In the July number there is a very interesting article on the latest developments in Musketry Training in the armies of Western Europe. The author gives a summary of the methods of instruction obtaining in Germany, Austria, Switzerland and England and in conclusion, compares the various systems of training with that in vogue in Russia. Of the several systems reviewed, he has most praise for the English, especially as regards practice on the rifle range, and he gives a detailed and fairly accurate account of our training in this respect.

Special attention is also directed to Switzerland, as in that country more importance is given to good shooting than, perhaps, in any other. The military training of the population commences when boys reach their eleventh year and consists of compulsory gymnastics, and this continues until they are fourteen. They then are enrolled in Cadet Corps and military training forms a regular and compulsory part of their education as long as they are at school. After leaving school, they go through the recruits' course of training if called up for it. Otherwise, unless they belong to a recognised Musketry Club, they may be called on in any year to go through a three days' course of firing. Thus it will be seen that every young man in the country, unless he be physically incapable, has a certain military training and at any rate, learns how to handle a rifle.

Other points deserving of notice are the following —

- (a) The soldier is taught that infantry fire is practically without effect at distances over 1100 yards and should, consequently, be employed at greater distances only under very exceptional circumstances.
- (b) The usual species of fire employed is slow individual; magazine fire is very seldom used, though the rifle is always to be carried with the magazine charged.
- (c) Great stress is laid on judging distance practice. Men are taught to estimate distance correctly up to 600 yards; ten companies, two officers and others up to 1100 yards. No range-finder seems to be in use for infantry.

In conclusion, the writer summarizes the points in which the countries of Western Europe have gone ahead of Russia. He gives them as follows:—

- (1) The instructor is given a large degree of freedom as to the methods he shall employ to gain the desired end,—that of fitting the soldier for the modern fire combat. In France this principle is carried so far that the Company Commander is allowed to choose his own course of range practices. Except the Russian no other regulations contain the strict prohibition that "*the rules laid down are on no account to be departed from.*"
- (2) In England, Germany and Austria the training is of a *progressive* character. In Russia the soldier continues to repeat the same course throughout his whole service.
- (3) Great attention is paid, especially in England, to firing as nearly as possible under service conditions.
- (4) Targets used are smaller and more interesting and more nearly approximate to the target offered by an enemy than those used in Russia.

Finally, the writer declares that, as regards Musketry Training, Russia is far behind other nations and that she should not be ashamed to copy their methods, as the experience of the past war shows that her own left much to be desired.

In the same number there is a review of the present condition of the British Army. After describing in detail Mr. Haldane's plans for re-organisation, the writer turns to India and, while pointing out that the number of British troops in the country is less than before the Boer War and that the Native Army is supposed to be somewhat disaffected, invites special attention to the fact that India is now able to manufacture practically any warlike material and, consequently, in the event of war, would be independent of the Mother Country in that respect. In conclusion, the writer remarks that the present Government has taken a quieter view of the military needs of the country, and that, while possibly their policy is still one of expansion, it is a peaceful expansion, not by force of arms that they strive for.

The August number contains an interesting account of Mischenko's famous raid, by an officer who took part in it. One of the most striking points brought out in this description is the great difficulty in obtaining information in a country which is, on the whole, well-disposed towards the enemy. Little or nothing could be got out of the Chinese population and actual observation of the enemy's movements was the only source of information. The whereabouts of Nogi's Port Arthur Army, so long a matter of doubt and anxiety to the Russians, was definitely ascertained, but not for long as Mischenko very soon lost touch of it again. The chief fault seems to have been in the Russians' lack of system in keeping up communication between the smaller bodies, and no single patrol, for instance, knew what the other patrols were doing or, indeed, where they were. Another fact worthy of notice was the very large number of casualties among officers compared with those in the rank and file. In several small encounters nearly 10 per cent of the total casualties occurred among the officers.

The September number contains a long and interesting account of the re-organization of the Chinese Army, in which the writer describes fully how this is being carried out. At present the land forces of China may be divided into two categories: the old troops and the new. The former consisted, practically, of three separate armies, which were quite distinct from one another in every respect, including that of training, if they could be considered to have any military training at all. Their numbers, exclusive of the provincial troops, were something over 100,000.

The re-organization of the Chinese Army may be said to date from 1901 and was due, in great measure, to the exertions of the Viceroy of Chili, Yuan shih-kai. Up to the commencement of 1906 six Divisions of the new troops had been raised in the provinces of Chih and Shan-tung, the whole number being commanded by Yuan-shih-kai. By the end of 1922 the Chinese Government intends to have raised 36 Divisions, each of 10,000 men.

The Division consists of the following troops:—

- 2 Brigades of Infantry, each of two regiments or six battalions.
- 1 Cavalry Regiment of 3 squadrons.
- 1 Artillery Regiment, of two Field and one Mountain Divisions, each of three 6 gun batteries.
- 1 Pioneer Battalion and 1 Transport Battalion, each of four companies.

The numerical strength of the different tactical units is as follows: Infantry Battalion, 600 men; Squadron 200 men; Artillery "Division", 300 to 400 men.

According to the *Times* correspondent, however, when the writer considers unreliable that the new troops already form 10 Divisions and 8 Brigades. The writer of the article thinks that in this estimate some of the "provincial" troops, who have been drilled more or less on European lines, have been included.

Under the new rules military service will not be compulsory except for the Manchus, who have always formed the military class. The whole length of service will be only 10 years, of which three years will be spent in the Active Army, three years in the 1st Reserve and four in the 2nd Reserve. The conditions for enlistment are as follows: Age between 20 and 25 years, height over 5 ft. 3 ins., good sight and good physical development generally. The pay has been fixed at 4 pence per month, the 1st being equivalent to a soldier in the writer's to about 2 shillings. The yearly contingent required to raise the 36 divisions already mentioned will be about 140,000 men, which is equivalent to about a tenth part of the whole male population of China reaching the required age each year.

The troops will be raised, as far as possible, on the territorial system, and each province will provide the troops who will be stationed in it. This is probably more from motives of economy than anything else.

The system at present employed in raising new regiments is worthy of remark. Out of the tax on beer, 10 per cent. has been set

part is first called out; these men go through a course of instruction which lasts 5 months. The best of them are then promoted to be corporals or soldiers of the 1st Class and on their shoulders is laid the duty of instructing the remainder of the recruits, who are then called up to the Colours. After completing 10 months' service, the soldier is considered to be fully trained, but it is not stated to what extent this training harmonizes with our notions as to the meaning of fully "trained." In fact, possibly owing to want of information, no details are given of the actual military training of the soldier, *i.e.*, in what it consists.

The training whilst in the two Reserves consists of a month's course every year in the 1st Reserve and the same course every second year in the 2nd. At the end of 10 years a soldier's service is at an end and there seem to be no regulations permitting good men to re-engage, though, in the event of war, men under 45 years of age may be allowed to re-enlist.

The writer then goes on to discuss what is, perhaps, the weakest point of the system,—the difficulty of creating a satisfactory corps of officers. The training is a long and elaborate one, commencing when the candidates are from 15 to 18 years old and lasting altogether over 7 years. Notwithstanding this, the results have so far been poor, mainly on account of the poorness of the material. With very few exceptions, the Chinese officers, even those who have been trained in Europe or Japan, have no capacity at all for command and readily lose their heads in an emergency. The number of candidates at present being trained is over 6,000, and during the last 3 or 4 years about 800 officers have joined the active army each year. It is calculated that, by the end of 1912, the various schools will be able to turn out 1,500 officers every year.

In conclusion, the writer gives the reasons why he considers that it will be very long before the Chinese soldier is fit to take the field against European troops. First and foremost, as has been pointed out before, the Chinese officer is, apparently, incapable of commanding men and, worse than this, has no desire to learn. He takes no interest in his profession and has no liking for sports or any manly pursuit, the result being that he is seldom fit to withstand the fatigues and hardships of a long and arduous campaign. The rank and file are hardy, strong men, but have no military spirit; they do not understand the meaning of patriotism or loyalty, but serve simply for the sake of their 4½ taels per mensem. In the event of war, it is quite probable that all who could do so would desert, not from cowardice, but because they have no liking for the business of fighting. On the whole, we may safely say that it will be a good many years, probably 20 or more, before the Chinese Army need be taken seriously as a force to be reckoned with in the field of international politics.

also belonged the breastwork intended to protect the old city against an assault.

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3. *Western section.*— This ran along a 13 mile front from the redoubt on the White Wolf Hill to the sea front on the south. It included the works on the Roussan and Table Mountain heights. By June 1904 the following were ready.

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Certain other works were hastily completed during mobilisation and in the siege itself. These eventually formed an advanced position connected by infantry trenches.

The works in this section had an area of fire over Cilia Bay. The fort were not powerful enough to prevent the enemy's ships from bombarding the city and the harbour from that bay. The works on Table Mountain were powerful, but their view was much obscured by the fact of their being commanded from Lonsan.

NOTE ON THE ARMAMENT AND FORTIFICATIONS OF THE LANSAN FRONT.

FRONT.

The large permanent forts were usually of an anti-aircraft type, with a low parapet for machine guns, a high parapet for modern mortars, and a Kikan provides an instance of an anti-aircraft work and being armed with modern machine guns.

A gun was mounted on the other side, with a trench in front of it, and a parapet of iron rails. Guns pointing to the rear mounted on a high parapet and the guns in the front on a low parapet. The high parapets had the guns supported by iron rails supported by concrete pillars.

There were a number of low parapets, some of which were of the anti-aircraft type, and some of the two classes, some of which were covered by gun rails, with total resistance. It was in one with the other that the Kikan worked the same.

defence, was killed. The idea was that the Japanese would use no guns over 15 centimetres—a sad miscalculation.

Many works were cut in the solid rock, an arrangement which gave excellent cover and proved a great obstacle to mines. Draw-bridges were employed in the forts. Escarps and counterscarps built before the siege were in concrete. The ditches were usually flanked by a caponier, also of concrete. Covered communications had been constructed throughout, so that even a heavy bombardment interfered but little with the work in the forts.

Works with open gorges were on the same plan, but the ditches were on three sides only. Even mere batteries had splinter proofs of concrete. The semi-permanent works were also of a powerful nature: some were in very rocky ground, cover being provided out of the solid rock, or masses of concrete were used with vertical scarps to deep ditches.

But, generally speaking, everything was more or less unfinished at the beginning of the siege, the concrete being only in a few cases covered with earth. And there were but few magazine and bomb proof stores for explosives.

The riflemen's trenches at first employed gave insufficient protection against artillery fire, so new ones were constructed with a 45 centimetre parapet and a 1 to 1·25 metre ditch, slopes as steep as possible, and strengthened with fascines, etc. Communicating trenches were deep enough to cover a man standing. Furthermore the men dug pits for their feet and sat in these trenches thus gaining complete protection.

The armament of the fortress was utterly inadequate to suit modern requirements. The main armament consisted of 15 centimetre guns, some indeed of Canet type, but the majority of older patterns. There were only 4 really powerful pieces, *viz.*, 4 mortars of 23 centimetres in Aquila's Nest. After these came the 10·7 centimetre and lighter ordnance and the machine guns. To these must be added a few guns taken from the ships and mounted in improvised batteries. Of these latter there were 2 of 19 centimetre, a few of 15 and 12 centimetre and some 50 lighter guns.

Thus the total number of medium guns on the land front of Port Arthur during the siege may be put at 120. In addition there were some 200 light guns and the field batteries. There was also considerable difficulty in moving ordnance about owing to the bad ground and the lack of heavy draught horses, so that there were no means of concentrating guns at any desired point in the very extended line of the defence. This deficiency of medium ordnance which usually constitute the backbone of the defence was a marked weakness in the land front. It also prevented the possibility of maintaining a reserve under the chief commander, a factor of the defence which might almost be called indispensable in a modern fortress. The weakness in guns was so great that after the surrender the Japanese even discovered muzzle-loading guns in position, relics of Chinese days which had been brought out to replace guns put out of action.

Examination into details reveals the weakness of the armament more clearly. For instance in the section chiefly attacked the northern there were only 25, 15 centimetre or heavier ordnance and 15 of these were howitzers or mortars. Among the latter the only modern pieces were the 4 mortars of 23 centimetre in Aquila's Nest the others being old pattern howitzers or 15 centimetre field mortars so that on this important front there was practically only one battery which was able to hold its own with the enemy.

The smaller calibre ordnance comprised a considerable number of Q F. 57, 47 and 37 *mm.* guns, naval 75 *mm.* guns for the most part located in the caponiers and flanking works for short range fighting together with the machine guns which last were used with excellent effect. There were also 7 Q F. field batteries with 76 *mm.* guns.

The heavy guns were mounted both in the intervals between the main forts and in the forts themselves which appears to show that the principles of fortification cannot be considered absolute but must vary with the terrain. The reason here was probably the difficulty already referred to which was experienced in moving heavy ordnance. The distribution of guns in the works varied considerably. For instance the Japanese on taking Erling found 4 medium guns 7 field and about 30 smaller guns varying from 37 *mm.* to machine calibre. This is a striking instance of the preponderance of light ordnance and machine guns which was a universal rule, and doubtless contributed largely to the invariable failure of the Japanese assaults.

As regards ammunition the provision was far below the necessities of the fortress. The heavy guns on the sea front had a very limited equipment while the 15 centimetre ordnance on the land front were only allowed 300 rounds a gun. On the theory that the equipment of fortress guns should be from 1000 to 1500 rounds per piece the inadequacy is sufficiently evident.

By a fortunate stroke of luck two train loads of ammunition were brought in at the last minute. But the straits to which the Russians were reduced may be gathered from the fact that before the end of the siege old Chinese projectiles, drill shell and even unexploded Japanese shell were employed.

In August 1904 when the last hope of a relief had disappeared orders were given to economise ammunition and by November the 15 centimetre guns had fired more than 5 or 6 rounds a day. When the war ended in peace there were only 100 of these 15 centimetre shells left.

The want of fuses was especially felt so much so in fact that an old Chinese fuse was used with the result that 3 out of 4 rounds were blank. In fact the variety of material which constituted the equipment of Port Arthur may well have justified a large Russian officer who was in the siege and characterising it as a mass of anarchy rather than a strategy.

Exercises were continued up to the spring the stores having been captured and attempts to neutralise the guns by the Russians having failed. In the summer of 1904 the war against us was entirely

successful. There were 9 to begin with, and afterwards some from the ships were brought ashore. The projectors were 90 centimetre and 170 centimetre. The power was derived from dynamos driven by steam engines or petrol motors located inside the forts. The installations, which were but indifferently protected, suffered considerably from the enemy's fire, and in the last days of the siege were totally destroyed, showing that a well protected central power station is desirable.

THE MOBILE TROOPS IN THE FORTRESS.

The command of the whole troops in the Kuantung Peninsula lay in the hands of General Stossel, A.-D.-C. to the Czar, and commander of the III Siberian Corps, a man of 56, ill-fitted for a siege, but of an energetic disposition. With him were Major-General Smirnoff, Commanding the fortress of Port Arthur, General Nikitine, commanding the artillery of the fortress, and Generals of Division Forek and Kondratenko commanding the 4th and the 7th East Siberian Rifle Divisions respectively.

This last Division formed the garrison proper of Port Arthur, and its commander General Kondratenko, a talented and brave officer who was killed in the last days of the siege, was looked upon by the Russian officers as the real soul of the defence. The 4th Rifle Division was charged with the duty of the advanced lines of defence and terrain in front of the fortress, while to the 7th fell the fortifications.

The Rifle Divisions had the usual organisation, *viz.*, 2 infantry brigades of 2 regiments (each of 3 battalions) and the 4th Rifle Division had in addition the 5th rifle regiment (of the 2nd Division) and an artillery brigade of 4 batteries. The 7th Division had one 3 battery brigade. There were also the 3rd battalion of Sappers, the Kuantung Sapper Company and a sotnia of Cossacks and some minor details. The mobile troops in the fortress not counting local corps and special services were as follows:—

- 30 battalions of rifles and infantry.

- 7 field batteries.

- 5 companies of engineers.

The fortress troops under General Smirnow were:—

- 3 battalions of fortress artillery.

- 1 mobile (sortie) battery.

- 1 Q.-F. 57 mm. battery.

- 1 engineer fortress company.

- 1 company of fortress miners.

- 1 fortress telegraph detachment.

The total of the troops at Port Arthur at the end of May comes to about 38,000 men, 28,000 of whom were infantry. Taking into account the 10,000 men of the fleet and the 5,000 belonging to the administration services, the strength of the troops in the fortress may be put at 53,000 men.

The Chinese workmen all fled at the beginning of the war, and field works, etc., were constructed by the troops under the direction of engineer officers.

THE JAPANESE BESIEGING ARMY AND ITS SIEGE PARK

Although the first operations against Port Arthur took place on the night of the 8th February before war was declared, the investment was not begun till June, when the III Army Corps was disembarked at Dalny and organised as the besieging force.

This Army Corps consisted of 3 Divisions—the 1st, 9th, and 11th, each of 12 battalions, with 2 machine-guns apiece, 3 squadrons, 6 batteries and 3 sapper companies. There were in addition an independent field artillery brigade (12 batteries) and a regiment of siege artillery for the siege ordnance. Afterwards a mixed reserve brigades were added, so that the besieging troops reached a total of 70,000 men, always kept up to strength by reinforcements from the mother country. Further a whole division was added towards the end of the siege by the 7th Division being sent to Port Arthur. This brought the numbers up to 90,000 men. The siege base was the port of Dalny, a large and excellent port built by the Russians at great expense, and connected with Port Arthur and Manchuria by lines of rail. It was occupied by the Japanese soon after the battle of Nanshan on the 20th May.

The Commander-in-Chief of the besieging army was General Baron Nogi, a descendant of an ancient and noble Samurai, and well known for his energy of character. In 1902 he was 75 years of age. The loss of both his sons in the course of the siege did not impair the strength of character of which he was a great show, such striking proof on the field of Mukden.

The Japanese siege park developed during the siege, but even at the end it was far from possessing all the requisites of modern siege trains, either in the numbers or in the nature of the ordnance which it contained. At the start there were over a hundred machine-cannons and heavy field-guns. The main armament consisted of 17 centimetre howitzers (16 and about 50 guns) and howitzers of 12 centimetres, the latter being the heavy field artillery, and there were also 15 and 19 centimetre cannons, and 107 centimetre guns. Of these were used in all of 90 naval guns of 11, 12, and 13 centimetres, and 100 cannons of all kinds of anti-quoted types. The most powerful guns were the 2 naval 15 centimetre guns, which were found to be completely useless against the Russian fortifications. Consequently 18 anti-quoted cannons of 25 centimetres were sent over from Japan. These were mounted on the main rail having been built at the Osaka Arsenal, and on the main rail at Mukden. Of the 100 cannons at Port Arthur, 14 were of 11 centimetres, 20 of 12 centimetres, 14 of 13 centimetres, 10 of 15 centimetres, 2 of 19 centimetres, and 41 of 107 centimetres. The 107 centimetre guns were the heaviest of the Japanese, and 24 of the 10 centimetre batteries sent from Korea were of 10 centimetres and 10 centimetres.

As therefore the assailant's artillery was far from being equal to the functions demanded of it either in the numbers or in the power of the guns the failure to make adequate preparation for infantry attacks can be readily understood. Even the heavy 28 centimetre shells were originally intended exclusively for naval warfare and therefore produced but relatively small effect on the masses of concrete in the modern type works. The want of a shell of the heavy 20 centimetre high explosive type was severely felt. In addition to this the number of 12 to 15 centimetre guns which form the main armament of a siege train was far below the figure now considered necessary for the attack of an important fortress.

Perhaps the recollection of the success obtained by the Japanese infantry in 1892 in the assault on Port Arthur under the Chinese, and also failure to appreciate at their true value the Russian fortifications, may have obscured the judgment of the Japanese authorities in their preparations, when considering the importance of the part to be played by artillery. And as a matter of fact the system of assaults by infantry, under which the earlier stages of the siege were conducted, showed clearly that General Nogi placed his chief reliance on that arm, while the failure of the said assaults, owing to insufficient artillery preparation, gave striking evidence of the necessity for an adequate use of the latter.

RUSSIAN PAPERS.

BY CAPTAIN G. S. PALMER, 95TH INFANTRY.

— "VOYENNI SBOBNIK."

In the July number there is a very interesting article on the latest developments in Musketry Training in the armies of Western Europe. The author gives a summary of the methods of instruction obtaining in Germany, Austria, Switzerland and England and in conclusion, compares the various systems of training with that in vogue in Russia. Of the several systems reviewed, he has most praise for the English, especially as regards practice on the rifle range, and he gives a detailed and fairly accurate account of our training in this respect.

Special attention is also directed to Switzerland, as in that country more importance is given to good shooting than, perhaps, in any other. The military training of the population commences when boys reach their eleventh year and consists of compulsory gymnastics, and this continues until they are fourteen. They then are enrolled in Cadet Corps and military training forms a regular and compulsory part of their education as long as they are at school. After leaving school, they go through the recruits' course of training if called up for it. Otherwise, unless they belong to a recognised Musketry Club, they may be called on in any year to go through a three days' course of firing. Thus it will be seen that every single man in the country, unless he be physically incapable, has a certain military training and, at any rate, learns how to handle a rifle.

Other points deserving of notice are the following —

- (a) The soldier is taught that infantry fire is practically without effect at distances over 1100 yards and should, consequently, be employed at greater distances only, under very exceptional circumstances.
- (b) The usual species of fire employed is slow individual magazine fire is very seldom used, though the rifle is always to be carried with the magazine charged.
- (c) Great stress is laid on judging distance practice. Men are taught to estimate distance correctly up to 600 yards. Officers and officers up to 1100 yards. No range-finder seems to be in use for infantry.

In conclusion the writer summarizes the points in which the countries of Western Europe have gone ahead of Russia. He gives them as follows —

- (1) The instructor is given a large degree of freedom as to the methods he shall employ to gain the desired end,—that of fitting the soldier for the modern fire combat. In France this principle is carried so far that the Company Commander is allowed to choose his own course of range practices. Except the Russian no other regulations contain the strict prohibition that "*the rules laid down are on no account to be departed from.*"
- (2) In England, Germany and Austria the training is of a *progressive* character. In Russia the soldier continues to repeat the same course throughout his whole service.
- (3) Great attention is paid, especially in England, to firing as nearly as possible under service conditions.
- (4) Targets used are smaller and more interesting and more nearly approximate to the target offered by an enemy than those used in Russia.

Finally, the writer declares that, as regards Musketry Training, Russia is far behind other nations and that she should not be ashamed to copy their methods, as the experience of the past war shows that her own left much to be desired.

In the same number there is a review of the present condition of the British Army. After describing in detail Mr. Haldane's plans for re-organisation, the writer turns to India and, while pointing out that the number of British troops in the country is less than before the Boer War and that the Native Army is supposed to be somewhat disaffected, invites special attention to the fact that India is now able to manufacture practically any warlike material and, consequently, in the event of war, would be independent of the Mother Country in that respect. In conclusion, the writer remarks that the present Government has taken a quieter view of the military needs of the country, and that, while possibly their policy is still one of expansion, it is a peaceful expansion, not by force of arms that they strive for.

The August number contains an interesting account of Mischenko's famous raid, by an officer who took part in it. One of the most striking points brought out in this description is the great difficulty in obtaining information in a country which is, on the whole, well-disposed towards the enemy. Little or nothing could be got out of the Chinese population and actual observation of the enemy's movements was the only source of information. The whereabouts of Nogi's Port Arthur Army, so long a matter of doubt and anxiety to the Russians, was definitely ascertained, but not for long as Mischenko very soon lost touch of it again. The chief fault seems to have been in the Russians' lack of system in keeping up communication between the smaller bodies, and no single patrol, for instance, knew what the other patrols were doing or, indeed, where they were. Another fact worthy of notice was the very large number of casualties among officers compared with those in the rank and file. In several small encounters nearly 10 per cent of the total casualties occurred among the officers.

The September number contains a long and interesting account of the re-organization of the Chinese Army, in which the writer describes fully how this is being carried out. At present the land forces of China may be divided into two categories: the old troops and the new. The former consisted, practically, of three separate armies, which were quite distinct from one another in every respect, including that of training, if they could be considered to have any military training at all. Their numbers, exclusive of the provincial troops, were something over 100,000.

The re-organization of the Chinese Army may be said to date from 1901 and was due, in great measure, to the exertions of the Viceroy of Chili, Yuan shih-kai. Up to the commencement of 1906, six Divisions of the new troops had been raised in the provinces of Chili and Shan-tung, the whole number being commanded by Yuan-shih-kai. By the end of 1922 the Chinese Government intends to have raised 36 Divisions, each of 10,000 men.

The Division consists of the following troops:—

- 2 Brigades of Infantry, each of two regiments or six battalions.
- 1 Cavalry Regiment of 3 squadrons.
- 1 Artillery Regiment, of two Field and one Mountain Division, each of three 6 gun batteries.
- 1 Pioneer Battalion and 1 Transport Battalion, each of four companies.

The numerical strength of the different tactical units is as follows: Infantry Battalion 600 men, Squadron 200 men, Artillery "Division", 300 to 400 men.

According to the *Times* correspondent, however, when the writer considers unreliable, the "new" troops already form 10 Divisions and 8 Brigades. The writer of the article thinks that in this estimate some of the "provincial" troops, who have been drilled more or less on European lines, have been included.

Under the new rules, military service will not be compulsory, except for the Manchus, who have always formed the military caste. The whole length of service will be only 10 years, of which three years will be spent in the Active Army, three years in the 1st Reserve and four in the 2nd Reserve. The conditions for enlistment are as follows:—Age between 20 and 25 years, height over 5 ft. 3 in., good sight and good physical development generally. The pay has been fixed at 4½ taels per month, the tael being equivalent, according to the writer, to about 2 shillings. The yearly contingent required to raise the 36 divisions already mentioned will be about 140,000 men, who have to pay out to about a tenth part of the whole male population of China reaching the required age each year.

The troops will be raised as far as possible on the territorial system and each province will provide the troops who will be stationed in it. This is probably more from motives of economy than anything else.

The system at present employed in raising new regiments is worthy of remark. Out of the total number of recruits, however, 4000

part is first called out; these men go through a course of instruction which lasts 5 months. The best of them are then promoted to be corporals or soldiers of the 1st Class and on their shoulders is laid the duty of instructing the remainder of the recruits, who are then called up to the Colours. After completing 10 months' service, the soldier is considered to be fully trained, but it is not stated to what extent this training harmonizes with our notions as to the meaning of fully "trained." In fact, possibly owing to want of information, no details are given of the actual military training of the soldier, *i.e.*, in what it consists.

The training whilst in the two Reserves consists of a month's course every year in the 1st Reserve and the same course every second year in the 2nd. At the end of 10 years a soldier's service is at an end and there seem to be no regulations permitting good men to re-engage, though, in the event of war, men under 45 years of age may be allowed to re-enlist.

The writer then goes on to discuss what is, perhaps, the weakest point of the system,—the difficulty of creating a satisfactory corps of officers. The training is a long and elaborate one, commencing when the candidates are from 15 to 18 years old and lasting altogether over 7 years. Notwithstanding this, the results have so far been poor, mainly on account of the pooriness of the material. With very few exceptions, the Chinese officers, even those who have been trained in Europe or Japan, have no capacity at all for command and readily lose their heads in an emergency. The number of candidates at present being trained is over 6,000, and during the last 3 or 4 years about 800 officers have joined the active army each year. It is calculated that, by the end of 1912, the various schools will be able to turn out 1,500 officers every year.

In conclusion, the writer gives the reasons why he considers that it will be very long before the Chinese soldier is fit to take the field against European troops. First and foremost, as has been pointed out before, the Chinese officer is, apparently, incapable of commanding men and, worse than this, has no desire to learn. He takes no interest in his profession and has no liking for sports or any manly pursuit, the result being that he is seldom fit to withstand the fatigues and hardships of a long and arduous campaign. The rank and file are hardy, strong men, but have no military spirit; they do not understand the meaning of patriotism or loyalty, but serve simply for the sake of their 4½ taels per mensem. In the event of war, it is quite probable that all who could do so would desert, not from cowardice, but because they have no liking for the business of fighting. On the whole, we may safely say that it will be a good many years, probably 20 or more, before the Chinese Army need be taken seriously as a force to be reckoned with in the field of international politics.

TACTICAL SCHEME COMPETITION, APRIL 1907.

References to map which will be supplied on demand.

GENERAL IDEA.

1. The road from LISS to DERBY *viâ* GARTH'S CROSS-STOKE-RONDAL, forms the line of communication of a Red Army which is operating to the east of the map.

2. The country is hostile to Red and formed bodies of hostile (Blue) troops are known to be to the South and South-East.

3. A Red convoy, consisting of a siege train, ammunition and other valuable stores, escorted by a Brigade of all arms, is moving up the line of communications to join the Red Army.

SPECIAL IDEA.

4. On the afternoon of June 1st this convoy has halted for the night at a Post, X, 2 miles West of BORTON.

2 Squadrons Cavalry.
25 Cyclists.
1 Section R. F. A.
1 Battalion Infantry
(with 2nd line transport).

5. The advanced guard of the convoy, strength as per margin, which is under your command, has halted for the night near DUNSTAN HALL.

6. At 5 P.M. on June 1st you receive the following instructions from the G. O. C., convoy:—

"Post X. 4-30 P.M. 1-6-07. The convoy will march at 6 ^{A.M.} tomorrow *viâ* GARTH'S CROSS-STOKE-RONDAL-CROMER, to Post Y, (4 miles North-East of CROMER).

I have reliable information that the country to the East is clear of hostile troops, but that a Blue force, estimated at 1,800 mounted men with 4 guns, arrived to-day at BANSTEAD (24 miles South of ALTON). The force under your command will protect the right flank of the convoy during its march tomorrow, within the limits of the map. When the rear of the convoy has cleared CROMER your force will follow to Post Y, acting as Rear Guard.

A new advanced guard for the convoy, strength 1 Troop Cavalry and 2 Companies Infantry, has been detailed and marches at 5-40 A.M. tomorrow.

Reports for G. O. C., convoy, during to-morrow's march, to be sent to the head of the main body of the convoy escort."

7. The convoy column, including its escort, occupies 4 miles of road and moves at 3 miles an hour.

8. Your patrols, at 3 P.M. on the 1st reported all clear up to a line from 5 miles South of ALTON to CROMER.

9. Your force, during the night of 1st-2nd June has 2 Companies Infantry on outposts.

Examination into details reveals the weakness of the armament more clearly. For instance in the section chiefly attacked (the northern) there were only 25, 15 centimetre or heavier ordnance and 15 of these were howitzers or mortars. Among the latter the only modern pieces were the 4 mortars of 23 centimetre in Aquila's Nest, the others being old pattern howitzers or 15 centimetre field mortars, to that on this important front there was practically only one battery which was able to hold its own with the enemy.

The smaller calibre ordnance comprised a considerable number of Q.F. 57, 47 and 37 *mm.* guns, naval 75 *mm.* guns for the most part located in the caponitzers and flanking works for short range fighting, together with the machine guns which last were used with excellent effect. There were also 7 Q.F. field batteries with 76 *mm.* guns.

The heavy guns were mounted both in the intervals between the main forts and in the forts themselves, which appears to show that the principles of fortification cannot be considered absolute but must vary with the terrain. The reason here was probably the difficulty already referred to which was experienced in moving heavy ordnance. The distribution of guns in the works varied considerably. For instance the Japanese on taking Erlung found 4 medium guns, 7 field and about 30 smaller guns (varying from 37 *mm.* to machine calibre). This is a striking instance of the preponderance of light ordnance and machine guns which was a universal rule, and doubtless contributed largely to the invariable failure of the Japanese assaults.

As regards ammunition the provision was far below the necessities of the fortress. The heavy guns on the sea front had a very limited equipment, while the 15 centimetre ordnance on the land front were only allowed 300 rounds a gun. On the theory that the equipment of fortress guns should be from 1,000 to 1,500 rounds per piece the inadequacy is sufficiently evident.

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The want of fuzes was specially felt, so much so in fact that ancient Chinese fuzes were used, with the result that 3 out of 4 rounds were blind. In fact the variety of material which constituted the equipment of Port Arthur may well have justified a high Russian official who was in the siege in characterising it as a museum of artillery rather than an arsenal.

Balloons there were none, the ship bringing the stores having been captured, and all attempts to manufacture inside the fortress having failed. But on the other hand the search-lights were eminently

successful. There were 9 to begin with, and afterwards some from the ships were brought ashore. The projectors were 90 centimetre and 170 centimetre. The power was derived from dynamos driven by steam engines or petrol motors located inside the forts. The installations, which were but indifferently protected, suffered considerably from the enemy's fire, and in the last days of the siege were totally destroyed, showing that a well protected central power station is desirable.

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The Commander-in-Chief of the besieging army was General Baron Nogi, a descendant of an ancient and noble Samurai clan, and well known for his energy of character. In 1902 he was 55 years of age. The loss of both his sons in the course of the siege did not impair the strength of character of which he was again to show such striking proof on the field of Mukden.

The Japanese siege park developed during the siege, but even at the end it was far from possessing all the requisites of modern siege trains, either in the numbers or in the nature of the ordnance which it contained. At the start there were over a hundred medium calibre and heavy field guns. The main armament consisted of 15 centimetre howitzers (16) and about 50 guns and howitzers of 12 centimetres, the latter from the heavy field artillery, and there were also 15 and 9 centimetre mortars and 10·7 centimetre guns. To these were added in course of time 30 naval guns of 11, 12 and 15 centimetres and numerous mortars of antiquated types. The most powerful guns available, 2 naval 15 centimetre guns, were however found to be incapable of destroying the Russian blindages. Consequently 18 coast howitzers of 28 centimetre were sent over from Japan. These are on an Italian model having been built in the Osaka arsenal under the direction of Major Grillo of the Italian artillery. Thus towards the end of the siege there were about 200 medium pieces in the train, of various calibres, numerous lighter guns of old design and slight value, 24 field and mountain batteries, some Hotchkiss batteries and numerous machine guns.

As therefore the assailant's artillery was far from being equal to the functions demanded of it either in the numbers or in the power of the guns the failure to make adequate preparation for infantry attacks can be readily understood. Even the heavy 28 centimetre shells were originally intended exclusively for naval warfare and therefore produced but relatively small effect on the masses of concrete in the modern type works. The want of a shell of the heavy 20 centimetre high explosive type was severely felt. In addition to this the number of 12 to 15 centimetre guns which form the main armament of a siege train was far below the figure now considered necessary for the attack of an important fortress.

Perhaps the recollection of the success obtained by the Japanese infantry in 1892 in the assault on Port Arthur under the Chinese, and also failure to appreciate at their true value the Russian fortifications, may have obscured the judgment of the Japanese authorities in their preparations, when considering the importance of the part to be played by artillery. And as a matter of fact the system of assaults by infantry, under which the earlier stages of the siege were conducted, showed clearly that General Nogi placed his chief reliance on that arm, while the failure of the said assaults, owing to insufficient artillery preparation, gave striking evidence of the necessity for an adequate use of the latter.

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· "VOYENNI SBORNIK."

In the July number there is a very interesting article on the latest developments in Musketry Training in the armies of Western Europe. The author gives a summary of the methods of instruction obtaining in Germany, Austria, Switzerland and England and, in conclusion, compares the various systems of training with that in vogue in Russia. Of the several systems reviewed, he has most praise for the English, especially as regards practice on the rifle range, and he gives a detailed and fairly accurate account of our training in this respect.

Special attention is also directed to Switzerland, as in that country more importance is given to good shooting than, perhaps, in any other. The military training of the population commences when boys reach their eleventh year and consists of compulsory gymnastics, and this continues until they are fourteen. They then are enrolled in Cadet Corps and military training forms a regular and compulsory part of their education as long as they are at school. After leaving school, they go through the recruits' course of training, if called up for it. Otherwise, unless they belong to a recognised Musketry Club, they may be called on in any year to go through a three days' course of firing. Thus it will be seen that every single man in the country, unless he be physically incapable, has a certain military training and, at any rate, learns how to handle a rifle.

Other points deserving of notice are the following :—

- (a) The soldier is taught that infantry fire is practically without effect at distances over 1,100 yards and should, consequently, be employed at greater distances only under very exceptional circumstances.
- (b) The usual species of fire employed is slow individual; magazine fire is very seldom used, though the rifle is always to be carried with the magazine charged.
- (c) Great stress is laid on judging distance practice. Men are taught to estimate distance correctly up to 600 yards; non-commissioned officers and officers up to 1,100 yards. No range-finder seems to be in use for infantry.

In conclusion, the writer summarizes the points in which the countries of Western Europe have gone ahead of Russia. He gives them as follows :—

- (1) The instructor is given a large degree of freedom as to the methods he shall employ to gain the desired end,—that of fitting the soldier for the modern fire combat. In France this principle is carried so far that the Company Commander is allowed to choose his own course of range practices. Except the Russian no other regulations contain the strict prohibition that "*the rules laid down are on no account to be departed from.*"
- (2) In England, Germany and Austria the training is of a *progressive* character. In Russia the soldier continues to repeat the same course throughout his whole service.
- (3) Great attention is paid, especially in England, to firing as nearly as possible under service conditions.
- (4) Targets used are smaller and more interesting and more nearly approximate to the target offered by an enemy than those used in Russia.

Finally, the writer declares that, as regards Musketry Training, Russia is far behind other nations and that she should not be ashamed to copy their methods, as the experience of the past war shows that her own left much to be desired.

In the same number there is a review of the present condition of the British Army. After describing in detail Mr. Haldane's plans for re-organisation, the writer turns to India and, while pointing out that the number of British troops in the country is less than before the Boer War and that the Native Army is supposed to be somewhat disaffected, invites special attention to the fact that India is now able to manufacture practically any warlike material and, consequently, in the event of war, would be independent of the Mother Country in that respect. In conclusion, the writer remarks that the present Government has taken a quieter view of the military needs of the country, and that, while possibly their policy is still one of expansion, it is a peaceful expansion, not by force of arms that they strive for.

The August number contains an interesting account of Mischenko's famous raid, by an officer who took part in it. One of the most striking points brought out in this description is the great difficulty in obtaining information in a country which is, on the whole, well-disposed towards the enemy. Little or nothing could be got out of the Chinese population and actual observation of the enemy's movements was the only source of information. The whereabouts of Nogi's Port Arthur Army, so long a matter of doubt and anxiety to the Russians, was definitely ascertained, but not for long as Mischenko very soon lost touch of it again. The chief fault seems to have been in the Russians' lack of system in keeping up communication between the smaller bodies, and no single patrol, for instance, knew what the other patrols were doing or, indeed, where they were. Another fact worthy of notice was the very large number of casualties among officers compared with those in the rank and file. In several small encounters nearly 10 per cent of the total casualties occurred among the officers.

The September number contains a long and interesting account of the re-organization of the Chinese Army, in which the writer describes fully how this is being carried out. At present the land forces of China may be divided into two categories: the old troops and the new. The former consisted, practically, of three separate armies, which were quite distinct from one another in every respect, including that of training, if they could be considered to have any military training at all. Their numbers, exclusive of the provincial troops, were something over 100,000.

The re-organization of the Chinese Army may be said to date from 1901 and was due, in great measure, to the exertions of the Viceroy of Chi-li, Yuan-shih-kai. Up to the commencement of 1906, six Divisions of the new troops had been raised in the provinces of Chi-li and Shan-tung, the whole number being commanded by Yuan-shih-kai. By the end of 1922 the Chinese Government intends to have raised 36 Divisions, each of 10,000 men.

The Division consists of the following troops:—

- 2 Brigades of Infantry, each of two regiments or six battalions.
- 1 Cavalry Regiment, of 3 squadrons.
- 1 Artillery Regiment, of two Field and one Mountain "Division," each of three 6-gun batteries.
- 1 Pioneer Battalion and 1 Transport Battalion, each of four companies.

The numerical strength of the different tactical units is as follows:—Infantry Battalion, 600 men; Squadron, 200 men; Artillery "Division", 300 to 400 men.

According to the *Times* correspondent, however, whom the writer considers unreliable, the "new" troops already form 10 Divisions and 8 Brigades. The writer of the article thinks that in this estimate some of the "provincial" troops, who have been drilled more or less on European lines, have been included.

Under the new rules, military service will not be compulsory, except for the Manchus, who have always formed the military caste. The whole length of service will be only 10 years, of which three years will be spent in the Active Army, three years in the 1st Reserve and four in the 2nd Reserve. The conditions for enlistment are as follows:—Age between 20 and 25 years, height over 5ft. 3 ins., good sight and good physical development generally. The pay has been fixed at 4½ taels per mensem, the tael being equivalent, according to the writer, to about 2 shillings. The yearly contingent required to raise the 36 divisions already mentioned will be about 140,000 men, which is equivalent to about a tenth part of the whole male population of China reaching the required age each year.

The troops will be raised, as far as possible, on the "territorial" system, and each province will provide the troops who will be stationed in it. This is probably more from motives of economy than anything else.

The system at present employed in raising new regiments is worthy of remark. Out of the total number of recruits chosen, a fifth

part is first called out; these men go through a course of instruction which lasts 5 months. The best of them are then promoted to be corporals or soldiers of the 1st Class and on their shoulders is laid the duty of instructing the remainder of the recruits, who are then called up to the Colours. After completing 10 months' service, the soldier is considered to be fully trained, but it is not stated to what extent this training harmonizes with our notions as to the meaning of fully "trained." In fact, possibly owing to want of information, no details are given of the actual military training of the soldier, *i.e.*, in what it consists.

The training whilst in the two Reserves consists of a month's course every year in the 1st Reserve and the same course every second year in the 2nd. At the end of 10 years a soldier's service is at an end and there seem to be no regulations permitting good men to re-engage, though, in the event of war, men under 45 years of age may be allowed to re-enlist.

The writer then goes on to discuss what is, perhaps, the weakest point of the system,—the difficulty of creating a satisfactory corps of officers. The training is a long and elaborate one, commencing when the candidates are from 15 to 18 years old and lasting altogether over 7 years. Notwithstanding this, the results have so far been poor, mainly on account of the poorness of the material. With very few exceptions, the Chinese officers, even those who have been trained in Europe or Japan, have no capacity at all for command and readily lose their heads in an emergency. The number of candidates at present being trained is over 6,000, and during the last 3 or 4 years about 800 officers have joined the active army each year. It is calculated that, by the end of 1912, the various schools will be able to turn out 1,500 officers every year.

In conclusion, the writer gives the reasons why he considers that it will be very long before the Chinese soldier is fit to take the field against European troops. First and foremost, as has been pointed out before, the Chinese officer is, apparently, incapable of commanding men and, worse than this, has no desire to learn. He takes no interest in his profession and has no liking for sports or any manly pursuit, the result being that he is seldom fit to withstand the fatigues and hardships of a long and arduous campaign. The rank and file are hardy, strong men, but have no military spirit; they do not understand the meaning of patriotism or loyalty, but serve simply for the sake of their 4½ taels per mensem. In the event of war, it is quite probable that all who could do so would desert, not from cowardice, but because they have no liking for the business of fighting. On the whole, we may safely say that it will be a good many years, probably 20 or more, before the Chinese Army need be taken seriously as a force to be reckoned with in the field of international politics.

TACTICAL SCHEME COMPETITION, APRIL 1907.

References to map which will be supplied on demand.

GENERAL IDEA.

1. The road from LISS to DERBY *viâ* GARTH'S CROSS-STOKE-RONDAL, forms the line of communication of a Red Army which is operating to the east of the map.

2. The country is hostile to Red and formed bodies of hostile (Blue) troops are known to be to the South and South-East.

3. A Red convoy, consisting of a siege train, ammunition and other valuable stores, escorted by a Brigade of all arms, is moving up the line of communications to join the Red Army.

SPECIAL IDEA.

4. On the afternoon of June 1st this convoy has halted for the night at a Post, X, 2 miles West of BORTON.

2 Squadrons Cavalry.
25 Cyclists.
1 Section R. F. A.
1 Battalion Infantry
(with 2nd line transport).

5. The advanced guard of the convoy, strength as per margin, which is under your command, has halted for the night near DUNSTAN HALL.

6. At 5 P.M. on June 1st you receive the following instructions from the G. O. C., convoy:—

"Post X. 4-30 P.M. 1-6-07. The convoy will march at 6 ^{A.M.} P.M. tomorrow *viâ* GARTH'S CROSS-STOKE-RONDAL-CROMER, to Post Y, (4 miles North-East of CROMER).

I have reliable information that the country to the East is clear of hostile troops, but that a Blue force, estimated at 1,800 mounted men with 4 guns, arrived to-day at BANSTEAD (24 miles South of ALTON). The force under your command will protect the right flank of the convoy during its march tomorrow, within the limits of the map. When the rear of the convoy has cleared CROMER your force will follow to Post Y, acting as Rear Guard.

A new advanced guard for the convoy, strength 1 Troop Cavalry and 2 Companies Infantry, has been detailed and marches at 5-40 A.M. tomorrow.

Reports for G. O. C., convoy, during to-morrow's march, to be sent to the head of the main body of the convoy escort."

7. The convoy column, including its escort, occupies 4 miles of road and moves at 3 miles an hour.

8. Your patrols, at 3 P.M. on the 1st reported all clear up to a line from 5 miles South of ALTON to CROMER.

9. Your force, during the night of 1st-2nd June has 2 Companies Infantry on outposts.

10. Required :—

- (a) An appreciation of the situation and the action you propose to take to carry out your instructions.
- (b) The orders you issue on the evening of June 1st.

Intending competitors should forward their names to the Secretary of the Institution, together with the sum of Re. 1, when they will receive a copy of the map to which the scheme relates, together with all instructions.

This competition will close on 1st September 1907. Solutions received after that date will be treated as "LATE" for adjudication.

THE JOURNAL

OF THE

United Service Institution of India

Vol. XXXVI.

July 1907.

No. 168.

THREE WEEKS IN MANCHURIA.

BY CAPT. T. W. ARCHDALE, D.S.O., R.F.A.

I arrived at Newchwang, or Yinkow as the Japanese call it, on the 16th of April. It is a straggling town built of blue-grey brick, on the left bank of the Hun-Ho, and is at present under military administration. As it is a free port there is a Russian Consul there, rather a sore point this with the Japanese, as the Russians will not allow them into Vladivostock, or on Russian territory. The Russian settlement and the railway station lie about two miles up the river and are connected with the town by a 2'-6" tramway laid along the road, and used for heavy goods, coolies shoving the trucks. When Mischenko made his famous raid, he missed a great opportunity at Newchwang because, apparently in ignorance of the Japanese strength, he sat down to bombard the station instead of rushing the town. If he had gone straight in he would have found only 400 Japanese with less than 100 rifles; he is reported to have had 2,000 Cossacks and a horse battery or two, so would not have had much difficulty.

The terminus of the Chinese railway is on the right bank of the river below the town. The country surrounding Newchwang is very low-lying and marshy, no hills of any description, and at the entrance to the river on the left bank is the old Chinese mud fort, now dismantled and falling into ruin. It was captured by the Japanese in the war of 1894. The river itself has a large traffic in boats from north of Mukden; they come down laden with peas and beans which are shipped at Newchwang for China and Japan. When I was at Newchwang there was considerable feeling about these boats, as a railway bridge thrown by the Japs across the river up near Mukden prevented them from coming down. There is plenty of water up the river, but the bar is very shallow, the greatest depth known

at spring-tides being 20 feet. Wharfage accommodation is bad, steamers have to lie about 30 yards off the bank and make use of pontoons as landing-stages.

There is an hotel, kept by a German in the town, but I did not test its capabilities. I think Newchwang will suffer heavily from Japanese competition in Dalny.

The Japanese Military Administrator, Colonel Yokura, received me very kindly and arranged for my journey to Liaoyang, even to giving me a soldier to look after my luggage, ticket, etc., and incidentally, myself. I had to change my horse-box—there were no carriages on the train at Taschichiao—and eventually reached Liaoyang about 9 o'clock at night. The country is quite flat as far as Taschichiao, but afterwards the railway skirts the hills, which lie, to the east, while west of the line the country is a dead level plain dotted with villages around which grow a few trees. Entrenchments had been thrown up to guard each railway bridge and the houses along the line, evidently built for their railway employees by the Russians, had all been prepared for defence, and are now mostly in ruins if not absolutely destroyed, every window and piece of wood-work having been looted by the Chinese.

At Haicheng, a walled town to the east of the line, the Russians had prepared the surrounding hills for defence, but had evacuated the position without fighting, after causing the Japanese army to deploy. At Anshanchan, where the railway runs through a gap in the hills close to the foot of a high mountain, there were also great preparations, but the Russians repeated their previous manoeuvre.

The hills at Anshanchan run from the main range across the railway in a perpendicular direction, but the position was not really very strong, the country in front offered facilities for concealing the advance, and Anshanchan hill itself was too steep to be well defended.

Most of the villages near the line shewed signs of the war, loopholed and broken-down walls, houses in ruins or with very new-looking thatch all told their own tale; the cottages appeared substantially built, solid-looking mud or brick walls with thatched roofs, while the biggest houses, temples, etc., had roofs of tiles. South of Taschichiao the peasants' cabins are shaped like railway carriages, the roofs being formed of kaoliang stalks covered with thick layers of mud, and the walls of plain mud. Kaoliang is a kind of millet, and is the crop commonly grown by the peasants; it grows to a height of ten feet and its stalks are used for innumerable purposes. As cover to troops it was of course invaluable.

At Liaoyang I was met by two officers and installed in an officer's quarter close to the station. The next morning the interpreter to the 62nd regiment arrived and said he had been detailed to show me round the district, so he and I and another officer mounted ponies and set off for Shousanpu, the scene of the first battle outside Liaoyang. The ride out did not give me a good impression of the Japanese pony, as my beast perpetually stumbled, and

eventually fell on his head, which appeared to have a good effect as he went better afterwards. We left our ponies at the foot of Shousanpu hill and walked up to the old Chinese watch-tower on the summit and had from there a splendid view of the whole of the battlefield. Facing south, immediately in front of us lay a low hill, called "Low Spur," heavily entrenched and separated from Shousanpu by a valley about five hundred yards wide in which was a battery emplacement facing south-west. To the east of Low Spur and slightly in advance lay a hill with two peaks, "Middle Hill," connected by a column with Low Spur: over this spur runs the main road to Liaoyang from the south and here occurred the heaviest fighting on the last day of the battle. East again of Middle Hill are a couple of low mounds not high enough to be called hills, and continuing the line east from them lies a long "Rocky Ridge" rising to an edge in places and with part of its front (southern) slope covered with low fir scrub. Rocky Ridge lies slightly to the rear of Middle Hill, and from its left centre projects south a rounded underfeature; flanking fire for the front face was thus amply provided, both by this underfeature and by Middle Hill. The distance from the railway to the apex of the position at Rocky Ridge was about three miles and from there the position bent sharply northwards along a rise running north-east to a hill lying north of the village of Hsin-li-t'um, which came within range of the redoubts lying around Liaoyang. These redoubts played a not inconsiderable part in the battle, as they rendered a turning movement of the Japanese round either flank a precarious proceeding. The right of the Russian position rested on two small villages close to the railway and on a small eminence between the railway and Shousanpu. The villages had been strongly fortified and semi-permanent works constructed on the hill, so that the desperate attempts made by the Japanese to capture them were fruitless. The ground in front of the position is a flat plain with a few villages, except opposite the east end of Rocky Ridge, where there are several low ridges running north and south, underfeatures of the main range, of which Rocky Ridge is really a spur. The apex of the Russian position was marked by a sunken road, which runs over a col on the east end of Rocky Ridge; this road formed a *point d'appui* for the assaulting columns, and it was at this point that the Japanese attack eventually succeeded. The entrenchments were very strong and consisted of deep trenches covering the whole length of the position, often double, and even treble in suitable places. In some places on Rocky Ridge, the rocks jutting out of the ground at the top were used instead of trenches, little heaps of cartridge-clips shewing the positions of the defenders. The gun positions deserve special mention, one between the peaks of Middle Hill flanked the whole face of Rocky Ridge, another on a hill right behind the left flank of the position commanded the exits from the valleys facing Rocky Ridge, and another behind Low Spur firing south-west assisted in the defence in that quarter. I was told that during the whole of the fighting the Japanese never properly located

the Russian guns except the battery on Middle Hill, the front face of the rear peak whereof is pitted with shell marks, shewing the efforts made by the Japanese gunners to reach their opponents. Good cover had been provided behind the hills for supports and reserves, and communication roads cut where the slope was too steep.

Low Spur had apparently not been paid much attention to by the Japanese gunners, but the tops of Middle Hill and Rocky Ridge had been fairly knocked to pieces. As the name of the latter implies the rock is generally on, or at any rate very near the surface, and the effect of the high explosive was pulverising.

The Russians had erected wire entanglements along the foot of the position, and had dug rows of military pits, while at the apex of the position, the hollow road over Rocky Ridge, they had placed a row of stone fougasses. These fougasses did not seem to have acted, because the stones were either collected in a pile beside each hole, or were lying in the hole itself. The trenches along Rocky Ridge were still half full of rubbish, and human bones were lying about the ground.

The position was undoubtedly very strong, and the Japanese on first approaching were misled by their Chinese spies, who told them that the Russians were retreating, and so they tried to take it by assault without preparation by the Artillery, who had been delayed by the heavy state of the roads. The word road is rather a misnomer for what passes for such in Manchuria. It is simply a track across country and in places where the peasant has taken the surface soil (enriched by horse-droppings) to put on his land, is below the level of the surrounding fields. Later on at Mukden I made the acquaintance of a road. After a day's rain it was simply a broad sea of mud, the carts were pulled through it with great difficulty, and a narrow track followed by pedestrians and horsemen meandered along it. My heart was in my mouth crossing the worst places, because the dry crust on the top shook under my weight, and I was afraid the pony might put a leg through and disappear. To return to Shousanpu. The Japanese suffered for their haste and false information by losing very heavily the first day, so the next day, on the arrival of their Artillery, they turned on all their guns, but were again repulsed, and finally after a night-attack, which was almost a failure, they captured the trenches on Rocky Ridge which the Russians were already evacuating in their retirement to their line of redoubts outside Liaoyang. These redoubts, eleven in number, stretched round the town in a semi-circle from river-bank to river-bank. They were very strongly built with thick parapets of about 6 feet command; plenty of overhead cover under parapet and *parados* were provided. The ditches about 8 feet deep and 15 feet broad, were filled with wire entanglement, which was also combined with rows of *trous-de-loup*, 6 feet deep with pointed stakes at the bottom, encircling the redoubt. At the time of the battle the fields were covered with kaoliang, which the Russians used to make a kind of *abattis*, but which also aided the defenders to a certain extent by keeping

their movements hidden. The spaces between the redoubts were covered with entanglements, and defended by Infantry and Artillery trenches, while zigzag approaches connected them with the second line.

I made an effort to go and see Manjayama, the flank position that General Kuroki attacked, but owing to want of a map I did not succeed. My guide, the interpreter, knew nothing either about the battles or the country, and our escort of one trooper eventually brought us to a hill which he said was Manjayama. It was not as a matter of fact, Manjayama being some six miles further on, but it was a very good example of Russian entrenchments, and barred the Japanese advance down the right bank of the Taitze. The right rested on a cliff over-hanging the river, the left on some high hills about three miles north; in fact the position may have extended further beyond the hills for all I knew, but that was all I could see. The centre was a low ridge, rising to a considerable height at each end. Infantry trenches were laid out along the slopes and emplacements constructed for guns in rear. The right flank was also covered by a small hill about 3 miles in rear on the edge of the river. In front of the position is a valley about two miles wide running from the high hills on the north to the river. Behind the hills on the other side of the valley runs the Taitze, which is joined by the Tang at a point where it turns west and runs towards Liaoyang. From this junction the river is in full view of the hill on which I stood.

If Kuroki had succeeded in forcing Manjayama earlier, he would probably have found this position in his way, it would have been a tough nut to crack as the field of fire was good, and there was next to no cover. Major Umane, commanding the 2nd Battalion 62nd regiment who shewed me the right location of Manjayama on a map, and who had been in the fight, said that the fighting there was the hardest the first army had had up to that time. The army had to ford the river breast high, so the men stripped and carried their uniforms on their heads.

Liaoyang itself lies in a flat plain on the banks of the Taitze, here flowing from east to west and emerging from the hills about two miles east of the town. The city proper is surrounded by a strong wall some 50 feet high and 20 feet thick, made of grey-blue brick. Outside the city and about one mile to the west lie the railway station and the Russian settlement. The Russians set fire to most of their storehouses and stacks of fuel before they left, but so much had been accumulated that they had not time to burn all, and large quantities fell into the hands of the Japanese. The big iron girder railway bridge over the Taitze had also been destroyed by them in four places, but was soon repaired by the Japanese. I crossed the river on a pile bridge about 200 yards below. As an illustration of the ingenuity of the Japanese, the revetments of the earthworks round the bridge were worthy of notice, the uprights in the revetment being pieces of T iron from the broken girders. The Japanese Governor General, or Viceroy of the Kwantung province, up to now has had his office at Liaoyang, but he is to move to Port Arthur in June.

Accompanied by the interpreter and a soldier, I left Liaoyang by train at six in the morning for Shahosu station near the Shaho River. On the way we passed several very interesting places. Yentai, where a branch line runs to the colliery, was in ruins. The fighting there, in the advance from Liaoyang to the Shaho, had been particularly heavy. Shortly afterwards the hill near Wulitaitz village shewed up about a mile from the railway on the east, and a mile or so further on the train crossed the Shiliho river, a line which had been very strongly held by the Russians.

The river was not a very formidable obstacle in itself, very like an ordinary Indian nullah, but the field of fire was good, and several villages formed strong *points d'appui*; one especially, Yinteniulu, close to the railway line and on the west of it, was very strongly held by the Russians and gave the Japanese much trouble to effect its capture. The train arrived at Shahosu station about 8-30. All the buildings and barracks about the station, of which there were quite a number, were roofless and in ruins; most of the damage had been done by the Russian guns, to whom the buildings formed a splendid mark after their occupation by the Japanese. About half a mile up the line is the bridge over the Shaho, so we walked there to get the lie of the country. We decided to walk down the left bank through the Japanese entrenchments to the bend opposite Linshenpu village, then cross to the other bank and walk as far as Shahopu up the river, then cross again and come back to the station. There was a large brickfield with its kilns close to the river and the railway, and the Japanese trenches lay among them: thence across the fields to some cottages and on to the bend of the river opposite Linshenpu with an advanced trench on the bank. These trenches were no shallow scratches, even in their present state I could not see out of them, so they must have been well over six feet deep when they were new. They extended in every direction, provided for every possible contingency, and must have given their occupants complete protection with, at the same time, a clear field of fire in front. Wire entanglements had been placed in likely places, trees masking the line of fire had been cut down, while hedges perpendicular to the line of defence had been left standing. We crossed by a plank footbridge to Linshenpu on the northern, or right bank, which here has a twenty foot command over the southern bank. The village had evidently been badly knocked about, and those walls that were still standing were loopholed in all directions. One high wall in the centre of the village shewed the effect of a field-gun shell on a mud wall, half a dozen clean holes through, but no material damage. I walked up the right bank along the line of the Russian trenches, which the peasants were hard at work filling in. They ran close to the edge of the cliff, and seemed to have been well constructed with shelters close behind, but the latter had been so filled in that it was impossible to judge of their extent. I saw gun emplacements, probably for one battery, about four hundred yards in rear on a slight rise, but I believe most of their guns were placed still further back.

The river bed was between 80 and 100 yards wide about here, and the rival trenches not more than 100 to 300 yards from each other, but above Lamutun village, east of the railway, the width of the river considerably increased. The Russian trench ran along the bank up to, and across the railway into a little wood, which was the scene of very fierce fighting, and which is known to the Japanese by their equivalent for "hell." From the wood to a cluster of houses opposite Lamutun village the trench continued along the edge of the bank, which here also was about 15 feet above the river bed. After these houses the Russian line disappeared and I did not meet it again till I reached that part of Shahopu village lying on the north bank, and which was loopholed and entrenched. I passed one or two Japanese trenches of slight profile on the way, but nothing else. I was told afterwards that the Russian trenches ran all the way along the edge of the river bank, so as I had walked a little inland I must have missed them. Shahopu lies on both banks of the Shaho where the main road from Mukden to Liaoyang crosses it, and does not differ from any other Manchurian village, the walls of stone and mud being as strong as usual. The Japanese seized South Shahopu and held it for some time, eventually vacating it and retiring to a better position somewhat in rear. General Fudimoto, commanding at Mukden, told me that the regiment he commanded in the war held this part of the village and at one period ran out of ammunition owing to the incessant attacks of the Russians. The latter, however, fortunately stopped their attacks, one more attack and the village would probably have been captured. When the Japanese retired it was at once occupied by the Russians, who fortified it strongly and continued their line some three hundred yards down the left bank. There was then a gap of some four or five hundred yards when the Japanese trenches reappeared, but a great part had been levelled and only those near the river bank had been left. The trenches ran along the bank towards Lamutun and were as numerous and as well constructed as those I had already seen west of the railway. I noticed a single gunpit on the bank close to a tree; why the Japanese had left the tree standing I could not imagine; possibly they used it as an observing post, but I should think it must have made an excellent mark for the Russian gunners. Lamutun was held by the Japanese and their line from there continued along the bank through another brickfield to the pumping station close to the railway bridge. The Japs had made great use of the bricks for loopholes and for revetting their trenches where the soil was at all loose, and they always kept the sides of their trenches as upright as possible. The brick engine house had been well prepared for defence, communication gaps made through the inside walls, earth thrown up against the walls outside, loopholes scientifically constructed, etc., and there was moreover a fine hole in the corner of the roof where a large shell had struck it. The whole locality was most interesting and a striking example of what can be done in the way of field works, but of course the soil was ordinary earth and its condition depended solely on the weather. I

caught the train again in the evening and went on towards Mukden. Traces of Russian defence works were plentiful everywhere. In one case a zigzag approach trench ran close to the railway for well over five hundred yards. At Mukden I was lodged near the station in a house that was used by officers travelling up and down the line, two were in it the day I arrived, but they left early the next morning, so I did not see them. I called on the Brigade Commander, General Fudimoto, who received me very kindly. During the war he commanded the 6th regiment and he gave me an account of the part taken by it in the battles of Telissu, Liaoyang, and the Shaho. At Liaoyang his regiment was in advance and was thrown against Rocky Ridge in the premature attack, and lost very heavily, but they were among the first to reach the Russian trenches in the end. Afterwards his men were entrenched in front of one of the redoubts, but were not able to capture it. The conversation had to be carried on through my interpreter, so I am afraid the full meaning of his remarks was often lost in the translation into indifferent English. I wished to see the country over which Nogi made his desperate attack so I rode out to the Imperial Tombs. These Tombs, where the Manchurian Emperors are buried, lie in a wood about three miles north of Mukden. The road lies across a swamp, and on close approach to the tombs is carried on a causeway, which had evidently been paved at some ancient period. This swamp bounds the tombs on the south, wood and scrub encircling the other three sides. The outside enclosure, about half a mile square, contains a wood of fir trees planted in regular rows, and is surrounded by a brick wall 2 feet thick, 8 feet high, with ornamental coping. In the wall are three gates, one on the east, one on the west, and a large main entrance facing south. From the main entrance a broad paved approach, flanked by large stone animals—elephants, dromedaries, horses, griffons, dragons, in pairs, one on each side, leads to a rectangular courtyard, about 150 by 100 yards in the centre of the enclosure. This courtyard is surrounded by a massive brick wall, roughly 60 feet high and 24 feet broad and is entered through a pair of splendid wooden doors. The north side of the courtyard is completed by a semicircular wall, containing a mound of earth covered by a plain dome, on which grass was growing. This was the actual tomb. There were several temples and pagodas inside the courtyard, and in the centre of the approach was a pagoda containing an enormous slab of stone supported on the back of a tortoise. The slab was covered with Chinese writing, and was evidently a tombstone of sorts, but my interpreter was unable to explain it. These monuments are not uncommon in Chinese temples and I had seen several of them before. Round the semicircular enclosure in which lay the actual tomb, and outside the high wall, was a high mound of earth planted with trees and overlooking the courtyard. I walked up and along it but the view was obstructed by trees. The outside wall was loopholed on the west, north, and east; the loopholes on the west had been made by the Russians, those on the other two sides by the

Japanese. I could always distinguish between the two by the height of the loophole from the ground. The view from the loopholes must have been considerably obscured by the trees and scrub growing outside the wall. The courtyard inside the enclosure did not appear to have been used for military purposes, though a stray shot or two may have struck the buildings, as workmen were at work on two of the corner pagodas. The third column of Nogi's army captured the place in the final battle after very severe fighting, and resisted all attempts of the Russians to dislodge them. From what I could see of the surrounding country, it is flat, with villages and an occasional wood, perhaps a little more undulating than the country south of the Shaho. I rode out one morning along the road to Hsinmintun as far as the villages of Tenwankton and Zookaton, about six miles north-west of Mukden, to have a look at the country. The road I have already described; the country might be called undulating, with long and very gentle slopes from the ditches or nullahs marking the lowest level of the depressions up to the high ground between them. I had a look at the nullah which assisted the Japanese in their attack on Zookaton village, it was about half full of water, some 30 feet wide and 20 feet deep, with steep sides and a muddy bottom, a very awkward-looking obstacle for mounted troops. Most of the villages had been badly knocked about, and were still very dilapidated; their walls were loopholed, but all traces of trenches in the open country had disappeared. From what I saw of the country, I would consider that it must have helped the Russians in no small degree. The valleys are so wide and their slopes so gentle, that a force holding one rise would have its opponent in view as soon as he had crossed the opposite one, probably two thousand yards away. His only help would be the nullah in the bottom, and perhaps a village on the slope. Most of the valleys which I saw ran north and south.

Mukden is the largest town in Manchuria. It is surrounded by two walls, the outside wall of mud broken down in places, and inside it the main wall, built of brick, very high and broad. It must have been a very useful protection in the old days. The gate had the usual right angle turn and was guarded by Chinese soldiers. The Chinese Viceroy, Governor of Manchuria, resides at Mukden. As far as the Japanese are concerned they have only a brigade of their troops here, the Divisional Headquarters being at Tieling. At the present moment Japan has two divisions of troops in Manchuria, called "Railway Guards," with headquarters at Tieling and Port Arthur, the troops being stationed at the various railway stations up and down the line. Japan had removed the remainder of her army at the rate of 8,000 men a day, and when you consider the means of transportation on a single line of railway, this speaks very well for Japanese management.

There are plenty of shops in Mukden and apparently the Chinese merchants do a great trade, but I am afraid they spend very little of their profits in keeping their town clean, the mud and

smells in it beating anything I have ever had the misfortune to meet.

The Japanese have constructed a light railway, 2'-6" gauge from Mukden through the mountains to Corea, practically following the line along which Kuroki's army advanced during the war. I went down by it as far as Pensihu, a large village close to the Taitze Ho, where the railway crosses that river. On the way I had a look at the Taling Pass, which the line crosses by the aid of some very steep gradients and sharp curves. The pass is the water parting between two valleys and is not very high itself, but the mountains on either side rise to a considerable height. I climbed up one side and had a splendid view over the surrounding country, ranges of hills in every direction, with the flat plain in front of Mukden showing up in the distance. The hills on either side of the pass had been entrenched by the Japanese, who had evidently had a fairly stiff fight here as they had erected a memorial on the hill to those who had fallen. As far as Taling the train runs alongside a stream in a wide valley, and the hills on either side have, generally speaking, a rounded contour, and traces of trenches were numerous; but after crossing the pass, the scenery changes completely, the mountains are far higher and steeper, often sheer cliffs, and the valleys are narrower and frequently no wider than the bed of the torrent. High up on the crests of the hills trenches were occasionally visible, but they were not so numerous as before. That may partly have been due to the rocky ground, but in any case the hills were not so well adapted for defence as those north of the pass. The southern valley had at one time been well wooded, but all the trees had been cut down for firewood, immense stacks, cut ready for making into charcoal, lying at the station before Pensihu. On arrival at Pensihu I paid my respects to the Commandant and then climbed a hill forming the southern boundary of the valley, and found the Taitze river running below me. The summit of the hill had been entrenched for Infantry and Artillery: for the latter a well graded road had been made up the side of the hill from Pensihu, but even with that it must have been a stiff pull for the teams. The gun pits were cut in the rear face of the crest and faced south-west down the Taitze valley, and alternative epaulments, more to the front, had been prepared for the right half battery to fire south-east. I heard afterwards that the Russians had made those facing south-west, but had not used them as the Japanese attack came from another and unexpected direction and that the latter had later on turned them to their own use and fired in a south-east direction against the Russian flank attack, hence the alternative emplacements. I slept that night in a Chinese house, quite clean and comfortable. All the stories I had heard of unpleasant bedfellows dropping from the walls and thatched roof came to my memory, but nothing occurred to disturb my slumber. Next morning the Commandant took me up some hills to the east and shewed me the line taken up against the Russian attack. The trenches were along the crests of a succession

of sharp spurs running down from the hills to the Taitze, and were as well constructed as the rocky nature of the ground would permit. We descended, and crossed the river by a bridge to where the line was continued on the other side along a flat spur, which comes down from the mountains bounding the Taitze valley on the south. Three of the trenches were just below the crest line and had an excellent field of fire across a broad valley running north and south. The railway and the road cross the river on pile bridges about twenty yards apart, the road bridge being covered with kaoliang stalks which make an excellent covering for the timbers. Coal mines turning out quite good coal exist at Pensihu, and the railway will be of great use in developing the mineral resources of the district which are believed to be considerable. The railway possesses excellent little trucks 21 feet long mounted on bogies, but the remainder of their rolling stock is rather of the ramshackle description. The line has however only been open about a month, so it is a little early to criticise it. I returned to Mukden that afternoon and the following day went back to Liaoyang, where I spent another morning on the Shousanpu position and took the train in the afternoon for Taschichiao. On reaching Taschichiao I was most hospitably received by the brigade staff and can not possibly say too much for their kindness. The following morning, to go to the battle-field about six miles south of the station, the General very kindly gave me a mount of his own charger, a waler, a pleasant change after the Japanese ponies. The Adjutant, Captain Kamada, came with me and also an officer belonging to the garrison who had been present at the fight with the Fourth Division, but as that Division was on the left and took no part in the actual battle he knew nothing. Mount Shishisan, a high and steep shale mountain, formed the centre of the position, on the left the line curving slightly forward entered the hills and on the right, also curving a little south it followed a ridge for about a mile, and then struck off across the plain to a small hill close to the railway line. Mount Shishisan was lined with infantry trenches, and on the low hill to the right were gun pits with infantry trenches. The guns were placed on the rear crest of the hill, so that they must have been very inconspicuous from the enemy's position, while at the same time they had a good field of view and fire except immediately under the hill in front. The field works in the flat ground further to the right were no longer in existence owing to cultivation, but trenches were still visible on the hill near the railway. I did not go to the left of Mount Shishisan where the line was among the hills, and where the Japanese eventually forced their way in by a night attack. The front was also covered by a stream running from east to west along the valley, but the ground was not so flat as usual, several low hills being easily scattered about: all the movements of the Japanese however could easily be observed from the top of the mountain. In rear of the right flank towards Taschichiao a second position had been prepared, but it was nothing like so strong as the first. If the ground had permitted operations in the plain to the west, the

Japanese could easily have outflanked the Russians and found a position from whence to enfilade their line, but the weather was bad and the ground too heavy to permit of movement. The Russian guns were so well placed here that they prevented any advance on the part of the Japanese during daylight, especially as the latter attempted to advance before the arrival of their Artillery. The counterstroke made by the Russians on their left was also one of their most successful attempts and drove the Japanese back on to their guns, then just coming up. Taschichiao was a strategic point of great importance, as it covered the railway to Newchwang, a good sea base for the Japanese, and it is rather surprising that the Russians did not attempt to hold it in strength. Possibly the fear of being outflanked and driven off the railway line influenced their retirement.

I went on south that afternoon and the first place of interest was Kaiping, a walled city on the bank of a small river. The railway did not go near enough for me to see the fortifications erected on the hills north of the town, where the Russian rearguard caused the Japanese to deploy, make an approach by night and assault the trenches at daylight, only to find them empty. The railway lies within sight of the sea for some distance and then turns inland on an excellently built stone embankment alongside a river in a fairly broad valley. Eventually a long steady incline brought us to the top of the pass, and we ran down into another valley where flows the Foochow river, and where the village of Telissu is situated. As there was only one company quartered at Telissu I went on to Wafangtien, where the remainder of the Battalion was housed. The walls of numerous barracks were still standing near the station, so the Russians had evidently considered it a place of some importance. The next morning, accompanied by an interpreter, I trained back to Telissu, where an officer joined us and we rode round the position in the Foochow valley, which formed the centre of the Russian line. We rode first to Lung-mean-wo, a long spur jutting out into the valley from the east, about 1,500 yards north of, and facing, a gap in the hills, through which runs the road, the railway and a tributary of the Foochow. The Foochow bends sharp to the west just before reaching the gap. This gap was about a quarter of a mile wide and was bounded by high hills which overlooked the Russian position. The guns were well placed, but the field of fire was practically limited to the gap in front, though the left of the line bending forward, commanded the Foochow river in its western bend for some distance. Sixteen guns were eventually captured here by the Japanese, but the whole of the first day they prevented the Japanese Infantry from debouching into the valley through the gap. The first day part of the Japanese Artillery was placed in the open, and as soon as they opened fire, they were overwhelmed by the Russians and the men had to leave the guns and take shelter. During the night the guns were shifted to their right behind a rise on the east side of the valley, and their new position was never correctly located by the Russians, who, the following day,

continued to fire at the old position. The spur Lung-mean-wo was well pitted with shell marks, shewing the accuracy of the Japanese fire, which was probably corrected by an observing party on one of the mountains bounding the gap. West of the hill Rin-chia-tun the Japanese guns were placed on a bluff over-looking the river and facing the village of Tafangshin and the main Russian position west of the Foochow. Here they were of great assistance to their Infantry, who after crossing the river, had to advance across an open strip of country against the village, which lay close under the high ground. Tafangshin and the high ground behind it were only held by the Russians as an advanced post, their main position being about $1\frac{1}{2}$ miles further back towards Telissu, but once captured by the Japanese the high ground afforded them a position from which to enfilade the Russian trenches the other side of the valley on Lung-mean-wo. The country between Tafangshin and the main position consists of undulating spurs running from the hills to the river across the line of advance, and affording excellent cover in the intervening valleys. The Russian guns, main position, were placed on the centre spur of a set of three, a good position, as from the Japanese point of view it must have been very hard to tell which spur they were on. The rear spur showed as many shell-holes as the spur actually occupied by the guns. This rear spur was also lined with gun emplacements constructed by the Japanese in their pursuit, and was the furthest point they reached after the battle. Defence works also existed across the valley itself, but were no longer in existence.

All critics appear to agree that the Russian position was bad, both flanks exposed and the line of retreat lying up a defile, moreover no precaution had been taken to secure safety in case of defeat. The result of the battle fully justifies these criticisms; the hills commanding one side of the defile were occupied by the Japanese with disastrous results to the retreating Russians. The Russian reserve, which was posted in the centre of the valley appears to have retired early in the day, with or without orders, and to have taken no part in the fight at all. General Fudimoto told me that it was a battalion of his Regiment, the 6th, which eventually captured the guns on Lung-mean-wo, but that they were unable to force the gap until the Russian guns had been somewhat subdued, so they waited in little valleys and folds of the hills on either side until it was possible to advance.

I went on by train that afternoon to Kinchow, where they had very kindly prepared a room for me in a barrack close to the station. The next morning the Adjutant kindly lent me his charger, a Russian horse, and accompanied by an officer, I rode up to the highest hill in the Nanshan position. This hill was situated slightly in rear of the centre, and from it I had a capital view of the whole position. The position is well illustrated by the left hand laid on the table with the fingers slightly bent and a little apart; on the spurs represented by the thumb and fingers were the redoubts, with

trenches along their front and sides protecting the valleys in between while the high hill on which I stood is like the knuckle of the middle finger. There was a gap on each side between the hill and the sea, of about half a mile, rather less on the west, covered by trenches running down to the shore. The field of fire was excellent and though there was a certain amount of broken ground at the foot of the hills, still all movements of the Japanese were clearly visible for two or three miles. Two field batteries on a hill in rear guarded the right flank and prevented the Third Division getting round that way, but they were unable to effectively guard the left. This flank was also exposed to the Japanese gunboats who were able to fire on the reverse slopes of the hills. If the Russians had been able to prevent these gunboats from coming into Kinchow bay, it is very doubtful if the attack would have succeeded, certainly it would have required more than one day. The redoubts were very conspicuous. Their parapets were made of earth brought up the hill in sandbags, the ground apparently being too hard and rocky to allow of much excavation. None of the parapets that I saw were much damaged. The position was very cramped, and lacked depth. There was no good position for the reserve, and no second position had been prepared, though a possible one existed a short distance back. Flank defence for the left flank had been somewhat neglected, though the right flank had been well secured, as I have previously described. Each spur flanked its neighbour and every attack had to be frontal, so it was only by wading through the sea under the covering fire of their own gunboats, that the Japanese managed to enfilade a shore trench and effect a lodgment on the left flank. According to one report it was the fire of the gun-boats catching the Russians waiting on the reverse slopes of the hills that primarily caused their defeat. I went on about noon by train to Port Arthur. On approaching the fortress the hills look as if they had had smallpox, so deeply are they pitted with shellmarks, and in many cases the rear slopes had been terraced to form cover for the supports and reserves.

My first afternoon I paid a visit to the War Museum erected by the Japanese. This Museum contains a marvellous collection of specimens of all kinds of war material used in the siege by both sides. There were cupboards full of uniforms; forage and foodstuffs in bottles and tins; while weapons, shell, cartridges, electric appliances, tools, etc., etc., were laid out on long tables neatly labelled in Japanese. An improvised "crowsfoot," of thin iron rods joined in a cube or square, with their pointed ends projecting at all the corners was very neat, also the small hand-grenades, made out of any available article, tin canisters, seven pound shells, etc., of a size convenient for throwing and containing high explosive. One small grenade, made of cloth and about the size and shape of a sausage, filled with a slow burning composition, was used to throw against sandbags, so as to set them on fire and cause the earth to fall out. Improvised maxims of five rifles fixed in a wooden frame, wires from each bolt lead to one

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handle, and a piece of wood lying along the triggers is connected by wires with a lever, which on being pressed fires the five rifles simultaneously. Wooden mortars used by the Japanese in the firing line to throw tin canisters containing some sort of high explosive, I could not find out exactly what. The mortar was simply a wooden barrel about two feet long bound round with withies, and mounted on a sort of toy carriage, its diameter being about four inches.

In front of the building were ranged specimens of guns, all descriptions, many battered and broken. The field howitzer, about five inches diameter, appeared simpler than ours, and had a broad flat spade with springs underneath the axle. The latest field gun was dated 1902. All round the building ran a fence formed of various patterns of wire entanglements, abattis, obstacles, live wire, boards studded with nails, *trous-de-loup*, etc., while specimens of palisades, trenches, revetments, loopholes, etc., used in the field were also shown, and on the slopes behind were types of various land mines and fougasses.

It was altogether the most marvellous exposition of war material and at the same time a striking testimony to the ingenuity of the Russian Engineers in devising such implements and obstacles and to the bravery and resource of the Japanese in finding ways and means to overcome them.

The following morning, accompanied by the interpreter, who spoke English very well, I drove out to 203 Metre Hill. The road was very rough and it took us nearly forty minutes to drive along the valley to the foot of the hill. A short way up the hill, we crossed the line of the Japanese trench, protecting the hill against counter attack, this must have been the nearest point to Port Arthur that the Japanese reached before the capitulation. The hill has two peaks, practically the same height 203 and 210 and to the east separated by a col about 100 feet lower lies a hill called Akasayama. The Japanese placed two 4.7 naval guns in a sandbag battery on this col after they had captured the hill. Both peaks were originally crowned by semi-permanent works, which had been absolutely demolished by the shell fire thrown on them, the guns on the east peak had been buried deep in the ruins, and a hole about three feet deep had been dug to show the breech of one of them. The interpreter told me that they were six-inch calibre, but I could not see enough of them to verify his statement. The hill was very strongly entrenched, three lines of trenches running round it and in front of each wire entanglements had been prepared. The western summit had a spur projecting still further west, slightly lower than the top of the hill, and under the column between the two peaks the Russians had quarried a tunnel connecting the trench for supports in rear of the hill with the firing trench in front. The trench in rear had been turned into a grave for the Russians after the battle, and each end is now marked with a cross. The Japanese attacked the hill from another, called 174 Metre Hill, facing 203, and forming the other side of a narrow valley. The approaches ran sideways down the hill into the bottom of the valley, whence they worked up the slope of 203. In the valley were

emplacements for two 11-inch howitzers, the Japanese had prepared these after the capture of the hill, but had not time to use them before Stoessel capitulated. The interpreter told me that he had been to the top of the hill the day after it was taken, and that all over the hill he had to pick his way between the bodies, many corpses were stripped naked by the force of the explosion of the hand grenades, and others were simply in small pieces. The north side of the hill was thick with Japanese corpses, the south side with Russians. It was not surprising that the Japanese made such efforts to obtain possession of the hill, when the view obtainable from the top is considered. The whole extent of the harbour is disclosed and everything therein placed absolutely at the mercy of guns controlled from the summit.

On the way out we passed the stables, barracks, and gunpark of a battery. The stables were well ventilated lofty buildings with stalls for 112 horses in each. The mud-floored stalls were arranged in four rows, two down the centre and one along each side, and were divided from each other by swinging bales. The mangers were wood, and I saw no provision for water. In the centre of each building was a large room, probably used for forage or harness, though I saw no pegs for the latter. The gunpark and barrack rooms lay close by and the whole arrangement was very compact.

In the afternoon I went up to Golden Hill fort on the east of the entrance to the harbour. The fort had apparently suffered very little damage. Three 11-inch howitzers were in a battery on the top, several emplacements being empty, while down on a spur towards the sea front was a battery with, I think, four 10-inch guns; two small Q. F. guns flanked the entrance from a position close to the water. The entrance to the harbour is very narrow, it looked about a hundred yards or less, while on the rocks on each side where lying the remains of the merchant vessels, sunk both by the Japanese and the Russians to block the entrance. Divers were hard at work taking the wrecks to pieces, the Japanese having made a contract with a private firm for their removal. The dockyard lies immediately underneath Golden Hill. In it were the Russian cruiser Pallada waiting for her repairs to be completed, and the mine laying vessel Amur lying on her side in the dry dock, the gates of which had not yet been repaired, the only other Russian war vessel visible was a half-submerged destroyer, lying on the beach close to the railway station. The town itself did not show very many traces of the siege; here and there was a burnt-out house or a shell hole in the roof—but most of the houses had escaped wonderfully, when the extent of the bombardment is considered.

The next morning I went round the forts on the eastern side of the land defences. This side of the defences consisted of a series of forts placed on the spurs projecting northwards from the range of hills which runs in a rough semicircle from the railway to the sea. On those spurs not occupied by forts were semi-permanent redoubts, and trenches covered the ground in between. All the forts

Sketch No. 1.
Port Arthur



wards Takushan



were on the crests of the spurs, and no effort appeared to have been made to make use of indirect fire in connection with the heavy guns, consequently nearly all the Russian guns of position offered a beautiful mark to the Japanese gunners. I was told that the latter took full advantage of the chance offered to them, and soon knocked out the Russian guns with no loss to themselves, the only heavy shell to do any damage falling on the concrete bed of a howitzer and shifting it round about thirty degrees. No other shot fell at the Japanese batteries, well placed behind hills, etc., and firing by indirect methods. The first fort we visited was Shi-shu-san lying immediately east of the railway. The Japanese had occupied the glacis by sapping, then tunnelled into the ditch and captured it, and then had run a mine under the parapet at the salient and blown it up. I was told that over 250 Russians had been buried in the ruins by the explosion alone. The whole fort though it had been solidly built of concrete was absolutely wrecked. I could tell where the ditch had been and the general outline of the place, but no details could be made out at all. The glacis was like a ploughed field with trenches, and the parapet was like a rubbish heap with a huge crater where the mine had been exploded.

The next fort to the east of Shi-shu-san was Ehrlung-shan, in a similar state of ruin, the Japanese having captured it in very much the same way as the other. The mouth of their tunnel under the crest of the glacis into the ditch was plainly visible and shewed that it had been cut out of the solid rock.

To the east of Ehrlung-shan lies the highest point of the range, called by the Japanese Observatory Hill. Here the Russians had mounted two 6-inch, approximately, naval guns on circular naval mountings. It must have been a stiff job getting them up the hill as the slope is very steep, and the summit is so narrow that the gun platforms had to be anchored down the front with wire cables. The guns were poised right on the summit of the hill so the Japanese with well directed shots had put them both out of action. One gun had had a foot or so knocked off the muzzle, the other had a dent in the barrel just behind the trunnions. A shell was jammed in the bore precisely at that spot and I wondered if by chance the Japanese projectile had struck the gun at the very moment that the shell was passing down the bore? There were also several lines of sandbag entrenchments on the hill, and along the foot of its front slope runs the Chinese wall, about 10 feet high and 12 feet thick, behind which the Russians had constructed many bomb-proof shelters of which few traces remained, the natives having stolen all the wood for firewood and other purposes. In front of Ehrlung-shan and slightly to the east lay West and East Penlang forts on lower spurs, and away across the wide valley in front of them stood up Takushan Peak, behind which the Japanese 11th Division had had its head quarters. To the north-east of Observation Hill and separated from it by a narrow valley was North Fort or Kikwan. The Japanese say that Kondrachenko was killed by a shell in

a casemate in this fort, but they are not sure about it as his death was kept very quiet by the Russians and few know where it did actually occur. The salient of this fort had also been destroyed by a mine and it was nearly as much of a wreck as the others, only the side ditches seemed to have escaped better than the rest. The Chinese had been grubbing among the ruins in the interior for wood and had disinterred Russian remains with the result that the stench in the fort was terrible. There was a small reservoir in the valley behind the fort and I noticed in all the forts I visited and also on 203 Metre Hill that the Russians had arranged an excellent water supply by means of pipes and pumps. The next fort East Kikwan had never been captured by the Japanese and according to my informant had been blown up by the Russians while peace negotiations were proceeding. Beyond this lay the sea forts which I was not allowed to visit.

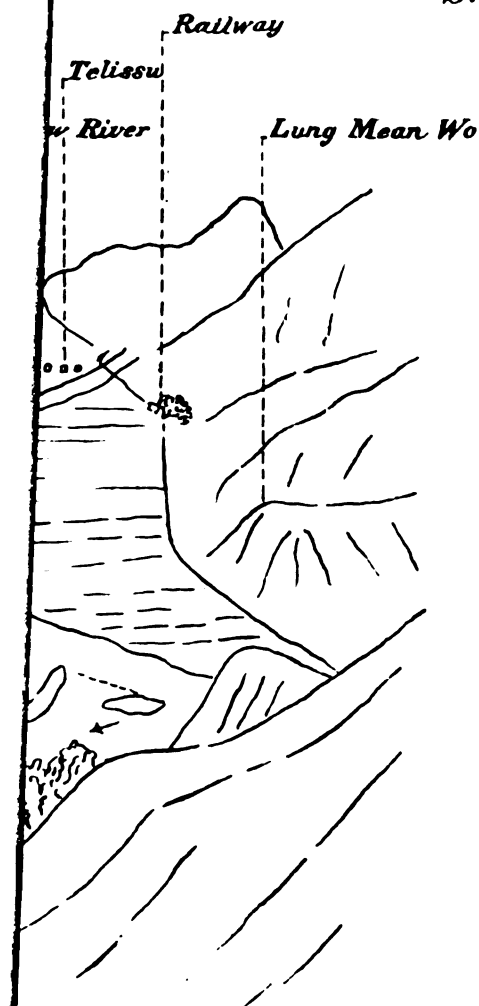
The main point that struck me after seeing the forts was the state of complete ruin to which they had been brought by the combined effects of shell and mine. The field of fire from all the forts was good and they mutually supported one another, but there was as usual with such hills, a certain amount of cover in the nullahs, formed by the water-courses as soon as they get off the hard ground of the hills into the soft earth of the valleys. The manner in which the Japanese had sapped their way right up to the crest of the glacis seemed to me little short of marvellous.

From an Artillery point of view the primary lesson appeared to me to be the necessity of using indirect fire. There were many positions in the valleys where the Russians could have placed batteries, concealed from the Japanese view and sheltered to a great extent from their fire. As it turned out, the Japanese heavy batteries soon got the better of their opponents, and the defence of the forts had to be confined to rifles and machine guns with such extraneous and devilish aids as hand grenades and bombs. I have not heard of it but I should think it quite likely that Turkish Fire and other relics of ancient warfare were also brought into play.

While proceeding from Shanghai to Chefu in a Chinese coasting steamer I had a most interesting conversation with the captain who had been in Port Arthur at the commencement of hostilities. On the night of the torpedo attack his ship was lying with the Russian fleet outside the harbour, but fortunately for him on the side next the land. All the senior naval officers were ashore at a big function at Admiral Starek's and they all came off to their vessels after the attack. He was refused permission to leave the next day for fear he should give away the result of the attack, so he had the pleasure of watching, from rather too close a proximity, the bombardment which then took place. The shells striking a vessel made dense black smoke; if they struck the water, black stuff like soot spread out over the surface, his vessel was covered with it from a shell striking the water twenty yards away. Report said that the Japanese torpedo boats had special instructions to go for the *Bayan*

Sketch No 15.

Telissu.



ty. Position on Western



Captain Willan, evidently a respected opponent. In the fight of the 12th of August, a Russian Volunteer Fleet steamer with three funnels went out in advance of the fleet and steamed straight for the Japanese. She found herself getting too close to them without any support and turned, but unfortunately in turning she presented her broadside to them and was promptly hulled. She had to return to harbour as quick as she went out and save herself from sinking by running up on the beach. A Dane who was in Port Arthur during the siege told him that the Russian regiments often went into action without their officers who stayed, or were left behind, in the town. The Dane was also responsible for the following story. The officers in charge of the forts had to indent on a main magazine for the ammunition they required. On one occasion an officer lost the book of forms and sent in a requisition properly made out on a piece of paper. This was returned to him with the intimation that the ammunition could not be issued to him without the production of the proper form. After great delay the officer obtained a new book and sent in a fresh requisition. This time the ammunition came out all right but with it a note saying that they were out of the size he wanted so sent the nearest they had. *Se non e vero e ben trovato.*

The Russian and Japanese mines were frequently met with in the adjoining seas and they were exploded by riddling them with bullets from a Hotchkiss. The bullet holes let in the water which caused the mine to sink and turn over, when the pendulum inside swung and made contact causing the mine to explode.

After leaving Port Arthur the Japanese Government very kindly completed their hospitality by giving me a passage from Dalny to Japan on a transport, the Kohina Maru, a boat which had been fitted up as a hospital ship. She carried some 220 invalids and another 60 or so passengers, officers on leave and such like. Dalny seemed to have escaped very well and both the docks and the town were in perfect order. The Russians had unfortunately for themselves, built the docks in too solid a manner to permit of their destruction at short notice, so they were practically intact.

We reached Moji in due course and there certain of us, myself included, disembarked, while the boat went on to Ousina. Both at Moji and Ousina all passengers by Government transport have to go through a hot bath and have their clothes fumigated. Most elaborate and comfortable arrangements have been made for this purpose and the hot bath was very acceptable after the sea water on board. I cannot conclude without mentioning the superb exhibit of war trophies that the Japanese have arranged in front of the Imperial Palace at Tokio in the Imperial Park. The park is a large enclosure some three quarters of a mile long by half a mile wide with four large grass plots, divided by broad gravel paths. In each plot were rows of Russian rifles piled in threes. Each plot was bordered by a string of guns, naval quick firers, howitzers, field guns, maxims, ammunition wagons, limbers, etc., while down the road nearest the Imperial Palace were about a dozen heavy guns up to a twelve-inch

naval gun, all on their proper carriages. The exhibit was a splendid idea and was carried out with the thoroughness that the Japanese show in everything they do.

The War Museum in Tokio is also very good and contains many relics both of the Chinese and of the late war. Even the wreath presented by the German Emperor to General Nogi after the fall of Port Arthur occupies an honoured place. On the walls are hung excellent pictures of the battles in Manchuria, as well as portraits of famous soldiers. I went there on a Saturday afternoon and it was simply crowded with people, an object lesson for the Army Council if only they could have seen it.

I must not close without paying a tribute to the kindness and generosity of the Japanese Government. I had of course intended to pay my own expenses, but as soon as I arrived in Manchuria, I found that I was not to be permitted to do so. During the whole of my stay in Manchuria I was treated as the guest of the nation.

Information was sent beforehand to the stations where I was going to stay and the officers did all in their power to make me comfortable.

WARFARE WITH DISEASE.

A Lecture delivered by Major G. S. Thomson, I.M.S., Specialist in Public Health, Western Command, at the Connaught Institute, Poona, on 18th September 1896.

The greatest scourge in the Army, both in peace and war, is the demon of disease. The problem for the Army in the future is how to prevent disease ; for the health of an Army is the first condition of its efficiency. As the Medical Committee "On the Medical Arrangements in the South African War" Report pregnantly state:—

"The Committee are of opinion that no satisfactory system of camp sanitation can be carried out without the intelligent co-operation of Company and Commanding Officers, and consider that in future all officers should receive periodical instruction in elementary hygiene, as applied to barracks and camps."—(Report of Surgeon-General Sir W. D. Wilson., p. 78.)

Hence the justification of this lecture, and if I can succeed in arousing your interest in the subject of "Warfare with Disease" our time will not have been spent in vain. You can only hope to **grasp the principles** of disease, causation and prevention in one discourse ; and the details would profitably occupy your attention on future occasions should opportunities offer during a course of lectures on "Warfare with Disease."

None of you believe that disease falls from the sky, or rises as an exhalation from the earth ; neither do any of you credit the theory of the ignorant and fatalistic population among whom we live that it is due to fate ; so that the very idea of combating disease is foreign to Hindu philosophy.

Some may think that it is due to climate ; and, whilst this is so to some extent, it does not explain all the facts and phenomena of disease. There was much truth in the contention of that Irishman in the Indian Medical Service who could not bear to hear the climate of India abused, and said, "A lot of you young fellows come out here, and drink and eat and eat and drink and have a rattling good time of it ; and ye die ; and then ye go home and say it was the climate that did it."

A gallant regiment is ordered on field service ; and whatever may be the total number of non-efficients during the ensuing campaign the Medical Officer can assure the Commanding Officer that 94 per cent of such non-efficiency will be due to disease and only 6 per cent to the weapons of destruction in the hands of the enemy. The Medical Officer can further truly state that most of this waste in war is due to preventible diseases. Forearmed and forewarned with this knowledge should the Commanding Officer think more of pipe-clay and facings than of cubic space and Pasteur filters ; should his officers

be compelled to pass "P" and "Q" and not be instructed in the A, B, C, of hygiene; should the men be experts in signalling and the helio and remain ignorant of the simple safeguards of sanitary science?

Should each and all of them play the war game and neglect the game of warfare with disease, and be more concerned about how to dodge bullets than how to dodge bacilli? Should the responsible authorities equip the force with maxims and *no microscopes*?

In war there are two foes—the open enemy and the silent assassin. Are we equally equipped to war with both? The *system* is at fault. We have a most highly trained and intrepid fighting machine, it must be kept going and cared for. You have left nothing undone that human intellect and foresight can suggest to make your men fit; have you studied how to keep them fit? You have made them worthy of a place in the fighting line in the hour of their country's need; you must learn how to preserve them there—intact from preventible disease.

We have a trusty arm; but by good organisation during peace in the formation of a Sanitary Corps of experts to instruct the officers and personnel in the prevention of disease and the preservation of health we hope to furnish forth the one thing yet lacking to secure its prowess. The soldier's art is war; it is for war he is trained and for war he is maintained. It is of the utmost importance, therefore, everything that can contribute to make him perfect—fitted to endure hardness as a good soldier—should receive equal attention from those who study the art of war and are responsible for the organisation and preparation of our armed forces. Across every page of the history of war is written the reiterated one sad message of disaster due to disease, and that disease kills more than bullets.

The average losses in all wars hitherto, with one notable exception, have been at the rate of 1 death at the hands of the enemy against 4 deaths from disease. It is rational, therefore, to ask if this loss to the army can be lessened, or wholly eliminated, and how best to attain that end? There can be no doubt that most of the disease and mortality in the army both during war and peace is preventable; and if, as His Gracious Majesty has said—"preventable, why not prevented?"

It is not prevented because we have not put into practice the methods of Hygiene sufficiently during peace. The best test of our knowledge of disease is our power to predict and prevent it. No measure of success, however, can be attained in the prevention of disease without the formation of a strong public opinion on the subject, and the enlistment of intelligent co-operation of every individual in the army it is proposed to protect.

The lessons of sanitary science must be put to practical use in every day life, they must be learned during peace so that they may become almost automatic and reliable therefore during war. This is not merely the Medical Officer's work. No matter how learned, zealous and energetic he may be he cannot go round day

and night enforcing the carrying out of the principles of disease prevention. Each one of us for ourself must keep the body clean, the teeth brushed, the clothing, dwelling, cook-house and surroundings sanitary.

Who is to look out for the purity of the air you breathe, the water you drink, and the food you eat, and the contagions you must avoid, if you don't do so for yourself?

By knowledge and experience, and by instruction in sanitation each one of us must learn how to live and *not* die prematurely by preventable disease. The Medical Officer can help by pointing out the dangers to health, and the safeguards against disease; then all of us both by precept and example can influence and instruct the men entrusted to our care to adopt the methods of Hygiene, and the hideous mortality and waste in war from diseases, largely preventable, will be eliminated.

That this is not the mere crack-brained idea of a medical faddist, look at two concrete facts in proof of the value of sanitation in the Army. The first is the triumph of peace, and remember, "Peace hath her victories not less renowned than those of War."

TOTAL DEATH RATES.

European Troops	...	...	50 years ago	50.69	per 1000.
			1898-1902 (4 years)	14.96	do.
			1903	13.05	do.
			1904	10.83	do.
Native Troops	...	...	50 years ago	37.45	per 1000.
			1897-1901 (4 years)	11.92	do.
			1903	10.04	do.
			1904	8.46	do.
Civil population of India—about	...	...	...	30.16	per 1000.
Home Army	...	...	...	6.19	do.

The only disease that has not yielded considerably to the efforts of Hygiene is Enteric:—

ENTERIC RATIOS PER 1000.

	Years.	Admissions.	Deaths.	
Among British Troops	1879-88	9.8	3.14	
	1889-98	24.1	6.38	
	1899	20.6	5.14	
	1900	16.6	4.77	(South African War no susceptible drafts, therefore much less incidence).
	1901	12.8	3.32	
	1902	16.7	4.29	
	1903	19.6	4.19	
	1904	19.6	3.76	
	1904	8	12	
Home Army	...	...	...

In fact, there has been no diminution in the morbidity from Enteric, although the mortality rate has progressively diminished.

INCIDENCE OF ENTERIC.

European Troops, etc., etc., in year 1904.

		Average strength.	Admissions.	Deaths.
Officers	...	2,319	20·3	2·59
Men	...	71,083	19·6	3·76
Women	...	3,220	8·7	·93
Children	...	4,964	6·4	·40
Ghurkas	...	10,000 (†)	1·3	·33
Native prisoners...	...	104,325	·5	·13
Native Troops	...	124,055	·6	·13
Home Army	...	244,425	·8	·12

Enteric in 1904 caused 34·7 per cent of the deaths among British Troops in India. It is *increasing* among the British Officers attached to the Indian Army of late years; and the figures for 1905 are the worst on record, and the officers, again, suffer *more* than any other class.

1905—British Officers with European Troops, per 1000.

Admission—21·5 Deaths—4·41

British Officers with Indian Troops, per 1000.

Admissions—18·2 Deaths—4·41

INDIAN INCIDENCE OF ENTERIC ON CORPS, AGE, AND SERVICE.

Ratio per 1000 of strength for period 1895-1900.

British Troops.	...	Admissions.	Deaths.	Percentage	Composition by age.		
		A.	D.	under 25.	25-30	30 & over.	
Cavalry	...	40·6	10·35	56	32	12	
R.A. { R. H. A.	...	28·5	6·28 }	52	36	12	
{ R. F. A. & M. Bs.	...	27·8	7·55 }				
Infantry	...	26	6·93	59	31	10	
R.A., Dismounted Garrison.	...	15·4	4·01	37	43	20	

AGE.

Admission per 1000	...	Under 20.	20-25.	25-30.	30-35.	35-40.	over 40.
India	...	25·6	40·4	15·9	6·8	2·3	0·6
British Troops—Liability to attack.	...	27·9	44·1	17·4	7·4	2·5	0·7
1895-98 . Deaths	...	5·12	10·87	4·09	2·61	1·26	...
Liability to death	...	21·4	45·4	17·1	10·9	5·3	...
England and Wales—Civil	...	0·267	0·388	·291	...	223	..
Population—males, deaths.							

AGE INCIDENCE.

Percentages to	Strength.	Liability.		Relative.	Liability.
	Present.	A.	D.	Morbidity.	Mortality.
Under 20	2·99	2·74	2·05	·92	·69
" 20-25	52·18	75·46	75·94	1·45	1·46
" 25-30	35·03	19·89	19·19	·57	·55
" 30-35	7·05	1·71	2·46	·24	·35
" 35-40	2·13	·18	·35	·08	·16
" 40 and upwards.	·61	·01	...	·02	...

SERVICE IN INDIA.

1895-98.	Under 1 year.	1-2.	2-3.	3-4.	4-10.	5-10.	10 to
Admissions per 1000,	65·7	32·2	22·7	17·1	15	10·2	1·7
Liability to attack...	39·9	19·6	13·8	10·4	9·1	6·2	1·0
Deaths ...	15·92	8·92	6·15	5·27	4·67	2·92	0·66
Liability to death ...	35·8	20·0	13·8	11·8	10·5	6·6	1·5

(From Major Ernest Roberts "Enteric in India.")

BENEFITS OF HYGIENE AMONG BRITISH TROOPS.

		1859 <i>vs.</i> 1903.		1859 <i>vs.</i> 1903.	
		Admissions.		Deaths.	
All troops at Home and abroad	...	1,112	758	18.2	7.13
United Kingdom	...	1,028	587	8.9	3.41
Gibraltar	...	948	397	7.7	4.05
Malta	...	1,213	620	19.0	6.34
Ionian Isles	...	881	?	12.5	?
Canada	...	545	323	10.4	3.02
Barbadoes	...	1,050	894	6.3	5.67
West Africa	...	580	1,229	25.0	15.15
South Africa	...	923	786	11.3	11.06
Jamaica	...	1,335	842	14.4	3.55
Bermuda	...	537	531	13.9	3.49
St. Helena	...	802	713	13.0	7.41
Mauritius	...	1,236	861	16.1	5.36
India	...	1,814	1,035	32.2	13.33
Ceylon	...	1,693	738	35	11.14
China	...	2,783	1,636	59.4	10.66

SOLDIER *vs.* CIVILIAN.

Comparative Mortality per 1,000.

Ages	20-25	3.4	versus	4.1	...	...	India.
	25-30	4.7	"	5.8	...	...	10.70
	30-35	7.0	"	8.2	...	...	11.43
	35-40	9.8	"	9.6	...	...	12.74
India in 1905—European Troops—Mortality all causes					...	...	10.81
					...	...	11.28

These results are due to the spread and practice of the knowledge of hygiene, better barracks, etc., etc., in the Army, and are evidences of the success of your active and intelligent co-operation in preventing disease among your men.

II. As an example of what can be done to diminish disease in warfare, look at the splendid record of our plucky allies in the Russo-Japanese war. With this noble example before them our responsible officials can no longer remain inactive and put away the necessary re-organisation by the plea that "*Funds do not permit*" or that "*War is not strictly a hygienic business.*"

It is true that war is not a pic-nic; and one cannot therefore expect that perfect sanitation that obtains in a properly administered modern and up-to-date community.

In their war with the Colossus of the North, the Japanese, up till 1st May 1905, had 43,892 men killed in battle, 7.32 per cent of their army in the field. Their wounded amounted to 49.99 per cent of the non-efficients; and their sick to 50.01 per cent; but of their total sick only 2 per cent died; 45 per cent of their sick and wounded returned to duty; and 35 per cent of their army never missed a day's duty during the entire 18 month's campaign in a trying climate under arduous work. Again, instead of the majority of their diseases being infectious, as in the Boer War, only 3.51 per cent of the

sickness and 0·76 per cent of the deaths in the Japanese Army were due to preventable infections. Another rather remarkable fact is that 24·3 per cent of their sickness was due to Beri-Beri, a disease which a Japanese naval doctor has ascertained the causation and prevention of; and thus has wiped it out of their Navy by an improved dictary.

Owing to jealousy this naval doctor's views did not, at first, receive due recognition in the Army Council of Japan; and had this disease been prevented, as it could have been, the Japanese sick would have totalled only $\frac{1}{3}$ of their wounded. The army ration was afterwards improved and Beri-Beri disappeared altogether towards the end of the campaign. The figures in former wars, therefore, have been almost reversed by the Japanese foresight and organisation, and warfare with disease.

A high Japanese official at the beginning of the Russo-Japanese Campaign said:—"We are prepared to face two million. In every war hitherto 4 men have died of disease for each one that fell by bullets or steel. *That will be the best position of Russia in this war.* We propose to eliminate disease, as a factor, and *in this way* we shall neutralise the superiority of Russian numbers and stand on a comparatively equal footing."

In the Japanese Army recruits are instructed as to health preservation, and officers learn sanitation as they learn drill. All doubtful water is boiled on a campaign and a sanitary staff proceeds with the van of the army. Pills preservative against fever, dysentery and diarrhoea, are placed on a par with the reserve ration.

Nothing would surprise the Japanese so much, should we ever conduct a campaign together, as our comparative indifference to the health of our men until they actually get ill. The humanitarian problem of tending the sick and wounded has been faced by us; but our regulations for disease prevention remain practically where they were a century ago. In 1894, in their war with China, the Japanese themselves had eight times as many sick as wounded. In their latest war they have established a marvellous record. To show how the Japanese improved by their experiences, contrast result in—

	Per cent, sick.	Per cent, deaths.
To Troops of all arms engaged.		
China-Japanese War (1894-1895) ...	59·20	9·29
North China (1900) ...	34·88	4·33
Russo-Japanese (1904-1905) ...	36·04	2·99
Japanese Army, Feby. 1904—May 1905:—Killed ...		43·892
Died of wounds...		9·054
Wounded ...		145·527
Sick ...		162·556
Contagious ...		10·565
Died of disease...		7·433
„ „ contagious		4·557
Total ...		383·584

Japanese Army, 1904-1905. Sick per cent at a certain date in one Army Corps :—

Diseases,—Malaria	...	...	...	0.37
Beri-Beri	...	...	...	24.30
Frost-bite	...	...	...	0.75
Dysentery	...	...	...	1.95
Typhoid	...	...	...	1.61
Small-pox	...	...	...	0.05
Wounded in action	...	...	...	45.53
All other wounds and injuries	...	...	...	3.71
All other diseases	...	...	...	21.73
Total				100 %

JAPANESE LOSSES.

Battles.	Killed.	Wounded.	Per cent.
Yalu	231	850	3.67
Nanshan	745	3,458	4.64
Tellissau	217	946	4.36
Liao Yang	3,182	15,410	4.84
Shaho	4,384	11,340	2.58
Mukden	9,690	31,535	3.25
Port Arthur	4,539	12,578	2.77

Mean ratio, 1 killed to 3.31 wounded.

Total killed, 43,892—7.32 per cent of the Army in the field.

Total Field Army—599,617.

Are these statistics true or manipulated? It is true there was no Ashmead-Bartlett to report the facts.

I. Four independent reports are available. [1, Surgeon-General Koike at Tokio; 2, "Times" Correspondent; 3, Surgeon-Major Seaman, U. S. A.; 4, Lieut-Colonel MacPherson, R.A.M.C., our Attaché.]

II. Referring to different dates.

III. Referring to different Army Corps, all agree substantially.

Contrast their achievement with our own records for South Africa :—

In the Boer War, 63,644 men were invalided Home for disease, and 8,221 on account of wounds, *i.e.*, nearly eight times as many for disease as for casualties at the hands of the enemy.

The total deaths in South Africa from disease were seven times more than deaths from wounds : and $\frac{1}{10}$ th of this mortality was due to infectious and preventable diseases. In the two years of the Boer War there were 31,363 cases and 1,248 deaths from dysentery ; and 42,741 cases and 7,998 deaths from enteric among the British troops ; 746 per 1,000 were admitted to hospital for disease and only 34 per 1,000 for wounds ; and the deaths from disease were 69 per 1,000 as against 42 per 1,000 from wounds and their consequences ; 350,000 were passed through the hospitals for disease during the war.

If such enormous waste in war is preventable, the preservation of the soldiers' health is the first duty of the State; Lest we forget

therefore, let us organise victory during peace as this is the best preparation for war. Grasp the fact that this hideous non-efficiency can be avoided and it will be avoided. We still want an organised Sanitary Service for our Army. A sanitary section of the Royal Army Medical Corps and Indian Medical Service would meet an important requirement of an Army in the field; an organisation containing trained men competent to deal with water sterilisation and to act as sanitary inspectors and instructors. To-day science is essential to victory. We want the instructed intelligence to be enlisted on the side of this severe fight against disease. Our scouts must be the sanitary experts who look out for and avert disease.

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In the field of disease the same laws hold good as in the field of nature. You may have the fertile soil, necessary rainfall, manure and skilled labour all ready, yet no crop until the particular seed is sown. We now procure excellent potatoes from Mahableshtar, for example, but not before the seed was brought here from Ireland. So every disease has its natural habitat, and when the germs reach suitable insanitary surroundings and fall upon susceptible individuals, an epidemic is sure to break out. In a similar view also, one tries to fight against disease by keeping it out of the soil (quarantine, isolation, segregation, medical inspection) by killing it (disinfection, germicides, burning, etc., etc.), by making the soil unsuitable for it (sanitation, hygiene, inoculation, vaccination, serum therapy, etc., etc.). Each line of defence has its appropriate place and function according to the disease to be dealt with ; and however confusing the multiple methods may seem to the uninitiated lay mind there is a sure foundation in the proved scientific facts of causation for EACH measure of prevention recommended by the medical faculty in their warfare with disease.

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Captain Willan, evidently a respected opponent. In the fight of the 12th of August, a Russian Volunteer Fleet steamer with three funnels went out in advance of the fleet and steamed straight for the Japanese. She found herself getting too close to them without any support and turned, but unfortunately in turning she presented her broadside to them and was promptly hulled. She had to return to harbour as quick as she went out and save herself from sinking by running up on the beach. A Dane who was in Port Arthur during the siege told him that the Russian regiments often went into action without their officers who stayed, or were left behind, in the town. The Dane was also responsible for the following story. The officers in charge of the forts had to indent on a main magazine for the ammunition they required. On one occasion an officer lost the book of forms and sent in a requisition properly made out on a piece of paper. This was returned to him with the intimation that the ammunition could not be issued to him without the production of the proper form. After great delay the officer obtained a new book and sent in a fresh requisition. This time the ammunition came out all right but with it a note saying that they were out of the size he wanted so sent the nearest they had. *Se non e vero e ben trovato.*

The Russian and Japanese mines were frequently met with in the adjoining seas and they were exploded by riddling them with bullets from a Hotchkiss. The bullet holes let in the water which caused the mine to sink and turn over, when the pendulum inside swung and made contact causing the mine to explode.

After leaving Port Arthur the Japanese Government very kindly completed their hospitality by giving me a passage from Dalny to Japan on a transport, the Kohina Maru, a boat which had been fitted up as a hospital ship. She carried some 220 invalids and another 60 or so passengers, officers on leave and such like. Dalny seemed to have escaped very well and both the docks and the town were in perfect order. The Russians had unfortunately for themselves, built the docks in too solid a manner to permit of their destruction at short notice, so they were practically intact.

We reached Moji in due course and there certain of us, myself included, disembarked, while the boat went on to Ousina. Both at Moji and Ousina all passengers by Government transport have to go through a hot bath and have their clothes fumigated. Most elaborate and comfortable arrangements have been made for this purpose and the hot bath was very acceptable after the sea water on board. I cannot conclude without mentioning the superb exhibit of war trophies that the Japanese have arranged in front of the Imperial Palace at Tokio in the Imperial Park. The park is a large enclosure some three quarters of a mile long by half a mile wide with four large grass plots, divided by broad gravel paths. In each plot were rows of Russian rifles piled in threes. Each plot was bordered by a string of guns, naval quick firers, howitzers, field guns, maxims, ammunition wagons, limbers, etc., while down the road nearest the Imperial Palace were about a dozen heavy guns up to a twelve-inch

naval gun, all on their proper carriages. The exhibit was a splendid idea and was carried out with the thoroughness that the Japanese show in everything they do.

The War Museum in Tokio is also very good and contains many relics both of the Chinese and of the late war. Even the wreath presented by the German Emperor to General Nogi after the fall of Port Arthur occupies an honoured place. On the walls are hung excellent pictures of the battles in Manchuria, as well as portraits of famous soldiers. I went there on a Saturday afternoon and it was simply crowded with people, an object lesson for the Army Council if only they could have seen it.

I must not close without paying a tribute to the kindness and generosity of the Japanese Government. I had of course intended to pay my own expenses, but as soon as I arrived in Manchuria, I found that I was not to be permitted to do so. During the whole of my stay in Manchuria I was treated as the guest of the nation.

Information was sent beforehand to the stations where I was going to stay and the officers did all in their power to make me comfortable.

WARFARE WITH DISEASE.

A Lecture delivered by Major G. S. Thomson, I.M.S., Specialist in Public Health, Western Command, at the Connaught Institute, Poona, on 18th September 1896.

The greatest scourge in the Army, both in peace and war, is the demon of disease. The problem for the Army in the future is how to prevent disease ; for the health of an Army is the first condition of its efficiency. As the Medical Committee "On the Medical Arrangements in the South African War" Report pregnantly state:—

"The Committee are of opinion that no satisfactory system of camp sanitation can be carried out without the intelligent co-operation of Company and Commanding Officers, and consider that in future all officers should receive periodical instruction in elementary hygiene, as applied to barracks and camps."—(Report of Surgeon-General Sir W. D. Wilson., p. 78.)

Hence the justification of this lecture, and if I can succeed in arousing your interest in the subject of "Warfare with Disease" our time will not have been spent in vain. You can only hope to **grasp the principles** of disease, causation and prevention in one discourse ; and the details would profitably occupy your attention on future occasions should opportunities offer during a course of lectures on "Warfare with Disease."

None of you believe that disease falls from the sky, or rises as an exhalation from the earth ; neither do any of you credit the theory of the ignorant and fatalistic population among whom we live that it is due to fate ; so that the very idea of combating disease is foreign to Hindu philosophy.

Some may think that it is due to climate ; and, whilst this is so to some extent, it does not explain all the facts and phenomena of disease. There was much truth in the contention of that Irishman in the Indian Medical Service who could not bear to hear the climate of India abused, and said, "A lot of you young fellows come out here, and drink and eat and eat and drink and have a rattling good time of it ; and ye die ; and then ye go home and say it was the climate that did it."

A gallant regiment is ordered on field service ; and whatever may be the total number of non-efficients during the ensuing campaign the Medical Officer can assure the Commanding Officer that 94 per cent of such non-efficiency will be due to disease and only 6 per cent to the weapons of destruction in the hands of the enemy. The Medical Officer can further truly state that most of this waste in war is due to preventible diseases. Forearmed and forewarned with this knowledge should the Commanding Officer think more of pipe-clay and facings than of cubic space and Pasteur filters ; should his officers

be compelled to pass "P" and "Q" and not be instructed in the A, B, C, of hygiene; should the men be experts in signalling and the helio and remain ignorant of the simple safeguards of sanitary science?

Should each and all of them play the war game and neglect the game of warfare with disease, and be more concerned about how to dodge bullets than how to dodge bacilli? Should the responsible authorities equip the force with maxims and *no miasmoscopes*?

In war there are two foes—the open enemy and the silent assassin. Are we equally equipped to war with both? The system is at fault. We have a most highly trained and intrepid fighting machine; it must be kept going and cared for. You have left nothing undone that human intellect and foresight can suggest to make your men fit; have you studied how to keep them fit? You have made them worthy of a place in the fighting line in the hour of their country's need; you must learn how to preserve them there intact from preventible disease.

We have a trusty arm; but by good organisation during peace in the formation of a Sanitary Corps of experts to instruct the officers and personnel in the prevention of disease and the preservation of health we hope to furnish forth the one thing yet lacking to complete its prowess. The soldier's art is war; it is for war he is trained and for war he is maintained. It is of the utmost importance, therefore, everything that can contribute to make him perfect—fitted to a standard of hardness as a good soldier—should receive equal attention from those who study the art of war and are responsible for the organisation and preparation of our armed forces. Across every page of the history of war is written the reiterated one sad message of disaster due to disease, and that disease kills more than bullets.

The average losses in all wars hitherto, with one notable exception have been at the rate of 1 death at the hands of the enemy against 4 deaths from disease. It is rational, therefore, to ask—can this loss to the army can be lessened or wholly eliminated, and is it best to attain that end? There can be no doubt that most disease and mortality in the army both during war and peace is preventable, and it is His Gracious Majesty's soldiers' problem—why not prevented?

It is not prevented because we have not put into practice the methods of Hygiene sufficiently during peace. The best test of our knowledge of disease is our power to predict and prevent it; measure of success however can be attained in the prevention of disease without the formation of a strong public opinion on our subject, and the enlistment of intelligent co-operation of the individual in the army it is proposed to protect.

The lessons of sanitary science must be put to practical use every day, for they must be learned during peace so that they become almost automatic and require little thought during war. This is not merely the Medical Officers' work. No matter how learned, zealous and energetic he may be, he cannot go round

and night enforcing the carrying out of the principles of disease prevention. Each one of us for ourself must keep the body clean, the teeth brushed, the clothing, dwelling, cook-house and surroundings sanitary.

Who is to look out for the purity of the air you breathe, the water you drink, and the food you eat, and the contagions you must avoid, if you don't do so for yourself?

By knowledge and experience, and by instruction in sanitation each one of us must learn how to live and *not* die prematurely by preventable disease. The Medical Officer can help by pointing out the dangers to health, and the safeguards against disease; then all of us both by precept and example can influence and instruct the men entrusted to our care to adopt the methods of Hygiene, and the hideous mortality and waste in war from diseases, largely preventable, will be eliminated.

That this is not the mere crack-brained idea of a medical faddist, look at two concrete facts in proof of the value of sanitation in the Army. The first is the triumph of peace, and remember, "Peace hath her victories not less renowned than those of War."

TOTAL DEATH RATES.

European Troops	...	...	50 years ago	..	50.69	per 1000.
			1898-1902 (4 years)	14.96	do.	
			1903	...	13.05	do.
			1904	...	10.83	do.
Native Troops	...	...	50 years ago	...	37.45	per 1000.
			1897-1901 (4 years)	11.92	do.	
			1903	...	10.04	do.
			1904	...	8.46	do.
Civil population of India—about			...	...	30.16	per 1000.
Home Army	...	...	...	...	6.19	do.

The only disease that has not yielded considerably to the efforts of Hygiene is Enteric:—

ENTERIC RATIOS PER 1000.

	Years.	Admissions.	Deaths.	
Among British Troops	1878-88	9.8	3.14	
	1889-98	24.1	6.38	
	1899	20.6	5.14	
	1900	16.6	4.77	(South African drafts, therefore much less incidence).
	1901	12.8	3.32	
	1902	16.7	4.29	
	1903	19.6	4.19	
	1904	19.6	3.76	
	
	1904	8	12	
Home Army				

In fact, there has been no diminution in the morbidity from Enteric, although the mortality rate has progressively diminished.

BENEFITS OF HYGIENE AMONG BRITISH TROOPS.

		1859 <i>vs.</i> 1903.		1859 <i>vs.</i> 1903.	
		Admissions.		Deaths.	
All troops at Home and abroad	...	1,112	758	18.2	7.13
United Kingdom	...	1,028	587	8.9	3.41
Gibraltar	...	948	397	7.7	4.05
Malta	...	1,213	620	19.0	6.34
Ionian Isles	...	881	?	12.5	?
Canada	...	545	323	10.4	3.02
Barbadoes	...	1,050	894	6.3	5.67
West Africa	...	580	1,929	25.0	15.15
South Africa	...	923	786	11.3	11.06
Jamaica	...	1,335	842	14.4	3.55
Bermuda	...	537	531	13.9	3.49
St. Helena	...	802	713	13.0	7.41
Mauritius	...	1,236	861	16.1	5.36
India	...	1,814	1,035	32.2	13.33
Ceylon	...	1,698	738	35	11.14
China	...	2,783	1,636	59.4	10.66

SOLDIER *vs.* CIVILIAN.

Comparative Mortality per 1,000.

Ages	20-25	3.4	versus	4.1	...	...	India.
	25-30	4.7	"	5.8	...	...	10.70
	30-35	7.0	"	8.2	...	...	11.43
	35-40	9.8	"	9.6	...	...	12.74
India in 1905—European Troops—Mortality all causes					...	...	10.81
					...	...	11.28

These results are due to the spread and practice of the knowledge of hygiene, better barracks, etc., etc., in the Army, and are evidences of the success of your active and intelligent co-operation in preventing disease among your men.

II. As an example of what can be done to diminish disease in warfare, look at the splendid record of our plucky allies in the Russo-Japanese war. With this noble example before them our responsible officials can no longer remain inactive and put away the necessary re-organisation by the plea that "*Funds do not permit*" or that "*War is not strictly a hygienic business.*"

It is true that war is not a pic-nic; and one cannot therefore expect that perfect sanitation that obtains in a properly administered modern and up-to-date community.

In their war with the Colossus of the North, the Japanese, up till 1st May 1905, had 43,892 men killed in battle, 7.32 per cent of their army in the field. Their wounded amounted to 49.99 per cent of the nonefficients; and their sick to 50.01 per cent; but of their total sick only 2 per cent died; 45 per cent of their sick and wounded returned to duty; and 35 per cent of their army never missed a day's duty during the entire 18 month's campaign in a trying climate under arduous work. Again, instead of the majority of their diseases being infectious, as in the Boer War, only 3.51 per cent of the

sickness and 0·76 per cent of the deaths in the Japanese Army were due to preventable infections. Another rather remarkable fact is that 24·3 per cent of their sickness was due to *Beri-Beri*, a disease which a Japanese naval doctor has ascertained the causation and prevention of; and thus has wiped it out of their Navy by an improved dietary.

Owing to jealousy this naval doctor's views did not, at first receive due recognition in the Army Council of Japan, and had this disease been prevented, as it could have been, the Japanese sick would have totalled only $\frac{1}{3}$ of their wounded. The army ration was afterwards improved and *Beri-Beri* disappeared altogether towards the end of the campaign. The figures in former wars, therefore, have been almost reversed by the Japanese foresight and organisation, and warfare with disease.

A high Japanese official at the beginning of the Russo-Japanese Campaign said:—"We are prepared to face two million. In every war hitherto 4 men have died of disease for each one that fell by bullets or steel. *That will be the best position of Russia in this war.* We propose to eliminate disease, as a factor, and in this way we shall neutralise the superiority of Russian numbers and stand on a comparatively equal footing."

In the Japanese Army recruits are instructed as to health preservation, and officers learn sanitation as they learn drill. A doubtful water is boiled on a campaign and a sanitary staff proceeds with the van of the army. Pills preservative against fever, dysentery and diarrhoea, are placed on a par with the reserve ration.

Nothing would surprise the Japanese so much should we ever conduct a campaign together as our comparative indifference to the health of our men until they actually got ill. The humanitarian problem of tending the sick and wounded has been faced by us, but our regulations for disease prevention remain practically where they were a century ago. In 1894, in their war with China, the Japanese themselves had eight times as many sick as record wounded. In their latest war they have established a marvellous record. To show it, the Japanese improved by their experiences, contrast result in—

Per cent, sick. Per cent, deaths.
To Troops of all arms engaged

Russo-Japanese War, 1904-1905	100	9·29
South Africa, 1899	100	4·3
China, Japanese, 1894-5	100	2·9
Japanese Army, Korea, 1894-May 1900	100	4·8
First Boer War	100	2·4
World War	100	16·25
S. Africa	100	1·25
China, Japanese	100	1·45
Russo-Japanese	100	7·15
Boer War	100	4·07
Total	100	5·54

Japanese Army, 1904-1905. Sick per cent at a certain date in one Army Corps :—

Diseases,—Malaria	...	...	...	0.37
Beri-Beri	...	...	...	24.30
Frost-bite	...	...	...	0.75
Dysentery	...	...	...	1.95
Typhoid	...	...	...	1.61
Small-pox	...	...	...	0.05
Wounded in action	...	...	...	45.53
All other wounds and injuries	...	...	...	3.71
All other diseases	...	...	...	21.73
Total				100 %

JAPANESE LOSSES.

Battles.	Killed.	Wounded.	Per cent.
Yalu	231	850	3.67
Nanshan	745	3,458	4.64
Tellissu	217	916	4.36
Liao Yang	3,182	15,410	4.84
Shaho	4,384	11,340	2.58
Mukden	9,690	31,535	3.25
Port Arthur	4,539	12,578	2.77

Mean ratio, 1 killed to 3.31 wounded.

Total killed, 43,892—7.32 per cent of the Army in the field.

Total Field Army—599,617.

Are these statistics true or manipulated? It is true there was no Ashmead-Bartlett to report the facts.

I. Four independent reports are available. [1, Surgeon-General Koike at Tokio; 2, "Times" Correspondent; 3, Surgeon-Major Seaman, U. S. A.; 4, Lieut-Colonel MacPherson, R.A.M.C., our Attaché.]

II. Referring to different dates.

III. Referring to different Army Corps, all agree substantially.

Contrast their achievement with our own records for South Africa :—

In the Boer War, 63,644 men were invalided Home for disease, and 8,221 on account of wounds, *i.e.*, nearly eight times as many for disease as for casualties at the hands of the enemy.

The total deaths in South Africa from disease were seven times more than deaths from wounds; and $\frac{1}{10}$ th of this mortality was due to infectious and preventable diseases. In the two years of the Boer War there were 31,363 cases and 1,248 deaths from dysentery; and 42,741 cases and 7,998 deaths from enteric among the British troops; 746 per 1,000 were admitted to hospital for disease and only 34 per 1,000 for wounds; and the deaths from disease were 69 per 1,000 as against 42 per 1,000 from wounds and their consequences; 350,000 were passed through the hospitals for disease during the war.

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Table III.

FACTORS IN

Key letter.	Factors	Variations.	Prevention.
M.	Malady.	{ Different Diseases.	{ Isolation. Segregation. Quarantine.
I.	Individuals Susceptible.	{ Age. Sex. Race. Habits. Previous attacks Immunity :— Natural, Acquired (active passive). Diet. Condition of body, etc., etc.	{ Selection of men. Medical inspection. Healthy seasoned troops. Serum Therapy. Inoculation. Vaccination. Anti-Toxin. Sanitation. Hygiene.
X.	X.—Germ, exciting cause, causa causans, unknown sometimes.	{ Number. Virulence. Viability. Site of absorption. Products. Mixed Infection. Malignancy.	{ Disinfection. Germicides. Light. Heat. Air, etc., etc.
E.	Environment, predisposing causes.	{ Climate. Fauna. Flora. Insanitation. Geology. Meteorology. Social conditions. Evolution. Education. Light. Heat. Air, etc., etc.	{ Hygiene. Alteration of the environment.
D.	Date of Delivery. Algebraically :— $D \frac{X}{I} + E = M.$	{ Exposure to "X" Efficient Access of "X"	{ Quarantine. Isolation of Patient. Segregation of Contacts. "Out of Bounds" in D. Os. etc., etc.

Table III.

DISEASE CAUSATION.

Lines of treatment.	Responsible authority.	Branch of Science.
<ul style="list-style-type: none"> { Isolation Segregation. Quarantine. 	<ul style="list-style-type: none"> { State (D. Os.) Public Health Acts, etc., etc. 	<ul style="list-style-type: none"> { Public Health.
<ul style="list-style-type: none"> { Marriage selection. Race exaltation. Race sterilisation. Improved health. Personal hygiene. Sera inoculation. Vaccination. Antitoxics, etc., etc. 	<ul style="list-style-type: none"> { Medical Officer and Man. 	<ul style="list-style-type: none"> { Public Health.
<ul style="list-style-type: none"> { Germicides. Disinfection. Mosquito curtains. Mosquito Brigades. Fly and rat killing Brigades. D. Os. for tar, lime, Hgcl₂, carbolic, etc. 	<ul style="list-style-type: none"> { State (D. Os.) 	<ul style="list-style-type: none"> { Bacteriology and Pari- sitology.
<ul style="list-style-type: none"> { Site. Soil Elevation. Aspect. Construction. Drainage. Cubic space. Conservancy. Water supply. Ventilation, Heating, Lighting. Dryness, etc., etc. 	<ul style="list-style-type: none"> { State and Man. 	<ul style="list-style-type: none"> { Sanitary Science.
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Table IV.

ILLUSTRATIVE

M.	I.	X.	E.
Itch.	{ Man—All ages, all sexes.	{ Acarus Scabei (no toxin).	{ Dirt (on body).
Drunkenness, (intoxication).	{ Do.	{ Pure Toxin.	{ Elaborated by Yeasts. Outside the body.
Diphtheria.	{ Do. (Youth ally) especi-	{ Toxin and Germ.	{ Contact. Parrots, Pigeons, Cats, Ox, Horse, (on body).
Smallpox.	{ Man—All ages, all sexes.	{ Toxin and Germ (!)	{ Contagion. Fomites. Infection Connection. (on and in body).
Malaria.	Do.	{ Sporozoa and Toxin (!)	{ Certain mosquitoes. In body, <i>i.e.</i> , in blood cells.
Plague.	Do.	{ Pest Diplo-coccus. Toxin, In blood, in fatal cases	{ 1. Bad ventilation. 2. Overcrowding. 3. Filth. (in bubo : in blood—fatal).
Venereal.	Do.	{ Spirochaeta pallida, discovered 1905 by Schaudin). Toxin.	{ Contagion only, and later in body.
Enteric.	{ Man. Age.—youth, short service.	{ Bacillus Typhosus. Both Toxin, and Germ.	{ Effective access, by 1. Contact. 2. Flies. 3. Dust, soil pollution. 4. Water. 5. Luxur consumption of proteids (<i>the</i> basis of the incidence of enteric). In and on mucous membranes.

Table IV.

DISEASES.

D. (Site).	PREVENTION.	AUTHORITY.	MALIGNANT TYPE.
Skin.	Cleanliness.	Man.	No.
{ Brain and Nerves.	{ Regulation "R.A.T.A." Avoid canteen. Moral suasion habits.	{ Man.	{ Yes "D. Ts"
{ Throat and Wounds.	{ Segregation. Isolation. Quarantine. Anti-Toxin.	{ Man and M. O.	{ Yes.
{ Skin and Mucous surfaces.	{ Isolation. Segregation. Cordon. Sanitary Police. Vaccination and Re-vaccination.	{ Man, M. O., and State.	{ Yes.
{ Bites Infected and Injected blood, and Sporozoa.	{ Mosquito Curtains. Mosquito Brigades. Quinine. Prophylaxis.	{ Do.	{ Yes. (Malignant Tertian Fever).
{ Inoculation. Inhalation. Fleas, cuts, 4. Accident. 5. Squirrel bites. 6. Rat bites.	{ Sanitation <i>vs.</i> 1, 2, 3. Anti-plague inoculation. Killing, etc., <i>vs.</i> 4, 5, 6.	{ Do.	{ Yes. (Primary, Plague, Pneumonia).
{ Contagion. Genital Extra genital	{ Obvious: -- avoid causes. Moral suasion. Sanitary Police. "C. D." Acts.	{ Do.	{ Yes. (?).
{ Intestines and Lungs (?).	{ Isolation <i>vs.</i> 1. Segregation and Destruction <i>vs.</i> 2. Quarantine, etc., <i>vs.</i> 3. Sanitation and Conservancy <i>vs.</i> 2, 3, 4. Reformed Dietary <i>vs.</i> 5. (The pest of western Civilisation).	{ Do.	{ Yes.

(See Table IV.)

Remember that disease is like the witches cauldron in "Macbeth" and stands on three legs—(1) the individual, (2) the germ, and (3) the environment, and as that cauldron falls to the ground by lopping off one leg, so the chain of events producing disease is broken by alterations in (1), (2), (3). It is a good maxim to make the breach in the weakest link in the chain of fortifications in the warfare with disease—that dread demon that broods over every camp and bivouac and is the greatest enemy of every man and army corps. As we are the donors of Western civilisation to the Empire of the Rising Sun, it behoves us to equip ourselves for this warfare with disease most perfectly, so that we may not only emulate but surpass the Japanese results; and stand forth in the full panoply of war—prepared and undismayed, for it is too late to sharpen one's sword when the drum beats to battle. Then if we do not achieve success we will have at least deserved it.

There are two defects in our national organisation and this is why we cannot hope to surpass Japan unless we begin at the right end. Compulsory instruction in hygiene is imperative in our elementary schools—there is where the sure foundations of success must be laid. Secondly, every Japanese is a martyr to "Bushido," that is, the spirit of patriotism. Each individual Britisher must become fired with enthusiasm for his country's cause.

WELLESLEY AND THE CONQUEST OF MYSORE.

BY MAJOR R. G. BURTON, 94TH RUSSELL'S INFANTRY.

To the student of the history of the British conquest of India, the career of the illustrious soldier whose military genius, first revealed in the East, attained its culminating point on the field of Waterloo, must ever be of transcendent interest. Nor is it as a soldier only, but as a great administrator that his capacity illuminates the records of his life and the pages of his Despatches. In those documents, remarkable alike for their literary quality and their perfection as despatches, can be traced the development of the great character of the man, his attention to all details that contributed to success and his clearness of insight into the matters he was engaged upon, whether administration of affairs, arrangements for the well-being of his troops, or dispositions for attacking the enemy to whom he was opposed.

In a previous article the present author has given a full account of the final campaign against Tipu Sultan,* but it remains to describe more particularly the events in which the illustrious subject of this memoir was concerned, and to trace his subsequent administration of affairs in Mysore. This will complete in these pages the account of the Indian career of the future Duke of Wellington, his campaign against the Mahrattas in the Deccan having already been described in all its details by the present writer in a former issue†.

After taking part in a somewhat inglorious campaign in the Netherlands, Colonel the Hon'ble Arthur Wellesley welcomed the opportunity of proceeding to the East, where the prospects of gaining distinction in the field appeared to be brighter than in Europe, and early in February 1797 he arrived at Calcutta in command of his regiment, the 33rd Foot. In May 1798 his brother, Lord Mornington, better known as the Marquis Wellesley, reached Calcutta as Governor-General, and set about that active policy which was to be productive of so much glory to the British arms, and of such great influence on the destinies of the British Empire in India.

In November 1798 a large force destined for the reduction of Mysore was assembled at Wallajahbad, and remained under Colonel Wellesley until General Harris‡ assumed command at Vellore to which place the army had moved in the meantime, February

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1799. General Harris found the army, amounting to 21,000 men, in an excellent state of organisation and preparedness for war, and wrote to the Governor-General:—"The perfect discipline of the troops do honour to themselves and to him; while the judicious and masterly arrangements in respect to supplies, which opened an abundant free market, and inspired confidence into dealers of every description were no less creditable to Colonel Wellesley than advantageous to the public service." In fact, he well appreciated the truth of the axiom that the success of almost all great enterprises depends on small details.

On the 11th February Harris was joined by the Nizam's Contingent of 16,000 men, including the British subsidiary force, and Wellesley's regiment, the 33rd Foot, being attached to this force, he took command of it with the rank of Brigadier, a good appointment for a man not yet thirty years of age.

The course of the campaign against Tipu Sultan has already been so fully described in these pages that there is no necessity to trace it in detail. But it may be noted here that at the battle of Mallavelly, during the advance on Seringapatam, Wellesley with his division turned the enemy's right flank, and so contributed to the victory gained on the 27th March.


The incident with which Wellesley was principally connected during the siege of Seringapatam, in the past, the subject of some controversy, was a night attack made by troops under his command on the 5th April. The British Army had taken up a position with the right resting on a height and the left on the river Cauvery. In front were some ruined villages and an aqueduct running in an easterly direction to within 1,700 yards of the fort and winding towards the right until it reached a grove of trees called Sultanpeth, 4,000 yards from the ramparts of Seringapatam, and about 900 yards from the British lines. In this broken ground the enemy's skirmishers and rocket men found a safe cover from which they could harass the advanced posts of the British Army, and on the morning of the 5th they occupied the grove and ruined village, from which they discharged rockets and kept up an annoying fusillade.

No doubt the enemy should have been forestalled in the occupation of this place, or an attack on it should have been made by daylight, but Colonel Wellesley with the 33rd Foot and a battalion of Bengal Infantry was ordered to make a night attack on the grove of trees, while Colonel Shaw with another detachment assaulted the ruined village. The following note, written by Wellesley to General Harris on the 5th April, after reviewing his orders, appears to show that he took a clearer view of the tactical situation than his Chief:—"I do not know where you mean the post to be established, and I shall therefore be obliged to you if you will do me the favour to meet me this afternoon in front of the lines and show it to me. In the meantime I will order my battalions to be in readiness. After looking at the topo as I came in just now, it appeared to me that

when you get possession of the bank of the nullah, you have the tope as a matter of course, as the latter is in rear of the former. However, you are the best judge and I shall be ready."

Certainly from the map it appears that it would have been sufficient to occupy the nullah, from whence a flank fire would have enfiladed the tope and the ground on the Seringapatam side of it, and would have rendered it untenable (*vide* map in Journal for October 1905).

The attack took place by night. Colonel Shaw was successful, but Wellesley was received with a tremendous fire of rockets and musketry, failed in his object, lost his way and his force in the darkness, and was struck on the knee by a spent ball; he only found his way back to camp after wandering about for some hours in the night. Some of his men were not so fortunate. Lieutenant FitzGerald of the 33rd was killed, and twelve grenadiers of his regiment were captured by the enemy and cruelly put to death, some by having nails driven into their heads, whilst others had their neck broken by Chettys, a caste who perform feats of strength. The incident illustrates the mistake of carrying out a night attack without previously reconnoitring the ground, which in this instance was intersected with canals for irrigating the betel plantation, and it seems probable that Colonel Wellesley would have suffered professionally had he been a less distinguished person than the brother of the Governor-General. As he told Lord Mornington, he resolved after this never to attack by night a post which had not been reconnoitred by day, a lesson which still holds good in our time and involves a recognised principle in the conduct of such night operations. The Duke of Wellington wrote to Colonel Gurwood (Editor of his Despatches) in 1833:—

"We had not reconnoitred the ground. The tope was on the enemy's side of the nullah—thus  I had carried the nullah

quite up to the mark O. My advanced guard under Captain West of the 33rd was beyond it and through the tope, and the lost prisoners on the enemy's side of it. But we could not maintain ourselves in it. In fact we knew nothing about the matter." The following is General Harris's private diary for this day:—

"5th April.—Marched to Seringapatam, rocketed a little on the march. Took up our ground nearly for the siege. Concluded the arrangements for detaching Gen. Floyd to Gen. Stuart. Formed parties for the attack of the post occupied formerly by the Bombay troops, and the tope of Sultawn-pettah. Lieut.-Col. Shaw to command the detachment for the Bombay post; Col. Wellesley that of the tope, as being composed of his own people. Remained under great anxiety until near 12 at night, from the fear our troop had fired on each other. Lieut.-Col. Shaw very soon reported himself in possession of the post; but a second firing commenced, and as he had sent to know what had become of the two native battalions, I could not be satisfied but that, in the dark, they had mistaken

therefore, let us organise victory during peace as this is the best preparation for war. Grasp the fact that this hideous non-efficiency can be avoided and it will be avoided. We still want an organised Sanitary Service for our Army. A sanitary section of the Royal Army Medical Corps and Indian Medical Service would meet an important requirement of an Army in the field; an organisation containing trained men competent to deal with water sterilisation and to act as sanitary inspectors and instructors. To-day science is essential to victory. We want the instructed intelligence to be enlisted on the side of this severe fight against disease. Our scouts must be the sanitary experts who look out for and avert disease.

Systematic instruction of selected N. C. O.s and men should be started at once. The soldier will show an interest in sanitary measures for his welfare, which give him wider views of his duties to himself and to the State, and which enlarge his sense of responsibility. He thus becomes an intelligent co-worker in his own deliverance from the scourge of the Army in peace and war—the demon of disease.

"Worry through" methods won't do in our next war. They cost us in South Africa £250,000,000 and a rush and ransack of the four corners of the Empire for many skilled specialists on £5000 a year each. You are prepared to avert future Magersfontens and Colenso;—let us also avert future Modder (Murder) Rivers where we lost far more men at its *unopposed crossing from caterie* than at the battle of Colenso from wounds.

Convinced therefore that much can be done in this matter by your co-operation, the principles of disease, causation and prevention are brought before you, as simply as possible, to enable you to wage a successful warfare with disease.

The factor in this causation may be conveniently summarised under four headings, in accordance with the modern conception of disease. The basis of this conception is what is known as the "Germ theory." It is a theory that has come to stay and is proved, and observation and experiment are duly adding to the list of the diseases in which germs are found to be the true causative factor, the very latest being syphilis. Professor Koch laid down the following postulates for the germ theory.

That germs are the efficient cause of disease it must be shown:—

- I.—That a specific germ is found in every case of the disease.
- II.—That it occurs in no other disease.
- III.—When isolated, in pure cultures, it can propagate the same disease.
- IV.—The same specific germ can be found in the tissues and organs of the subject of the reproduced disease.

The complete proofs of the four postulates for some diseases is very difficult, *e.g.*, leprosy and syphilis which mankind suffer from almost alone; and living experiments on men are not desirable.

(See Table III.)

All these factors are equally important in disease causation; and none of them can be ignored or unduly exaggerated to neglect of the others. They are inter-related to each other, and mutually dependent to produce their greatest common factor—disease.

Infectious disease, then, might be defined in a Spenserian manner as the "Simultaneous concurrence of a complex congress of factors, any one of which being absent the disease cannot occur. Just as the same twentieth century philosopher has defined life as "the continuous adjustment of internal relations to external relations," so disease is the want of adjustment to our environment produced and induced by the above factors and their inter-actions.

If we wish to entirely prevent disease we must take into account all the co-related factors, *e.g.*, the inhabitants of the Fiji Islands never had measles among them; and many of them would not believe that such a disease existed, or at any rate concluded it would never attack them. One day a ship with some cases of measles on board touched their shores, brought the germs—and a widespread epidemic broke out which spared neither age, sex, nor condition of life. As regards measles these people were living in a fool's paradise—they had all the factors except the germs. Just as here in India we had all the factors for plague in abundance for ages past in the shape of insanitations, overcrowding, bad ventilation, and filth, yet no epidemic of plague until the germs of that dreadful disease were imported from China ten years ago.

In the field of disease the same laws hold good as in the field of nature. You may have the fertile soil, necessary rainfall, manure and skilled labour all ready, yet no crop until the particular seed is sown. We now procure excellent potatoes from Mahableshwar, for example, but not before the seed was brought here from Ireland. So every disease has its natural habitat, and when the germs reach suitable insanitary surroundings and fall upon susceptible individuals, an epidemic is sure to break out. In a similar view also, one tries to fight against disease by keeping it out of the soil (quarantine, isolation, segregation, medical inspection) by killing it (disinfection, germicides, burning, etc., etc.), by making the soil unsuitable for it (sanitation, hygiene, inoculation, vaccination, serum therapy, etc., etc.). Each line of defence has its appropriate place and function according to the disease to be dealt with; and however confusing the multiple methods may seem to the uninitiated lay mind there is a *sure foundation in the proved scientific facts of causation* for EACH measure of prevention recommended by the medical faculty in their warfare with disease.

Now some of the lines of defence against preventable diseases are easier of practical application than others. This is best illustrated perhaps by taking a few typical examples of diseases you are familiar with and pointing out what medical science can do to prevent them.

Table III.

FACTORS IN

Key letter.	Factors	Variations.	Prevention.
M.	Malady.	{ Different Diseases.	{ Isolation. Segregation. Quarantine.
I.	Individuals Susceptible.	{ Age. Sex. Race. Habits. Previous attacks Immunity :— Natural, Acquired (active passive). Diet. Condition of body, etc., etc.	{ Selection of men. Medical inspection. Healthy seasoned troops. Serum Therapy. Inoculation. Vaccination. Anti-Toxin. Sanitation. Hygiene.
X.	X.—Germ, exciting cause, causa causans, unknown sometimes.	{ Number. Virulence. Viability. Site of absorption. Products. Mixed Infection. Malignancy.	{ Disinfection. Germicides. Light. Heat. Air, etc., etc.
E.	Environment, predisposing causes.	{ Climate. Fauna. Flora. Insanitation. Geology. Meteorology. Social conditions. Evolution. Education. Light. Heat. Air, etc., etc.	{ Hygiene. Alteration of the environment.
D.	Date of Delivery.	{ Exposure to "X" Efficient Access of "X"	{ Quarantine. Isolation of Patient. Segregation of Contacts. "Out of Bounds" in D. Os. etc., etc.
	Algebraically :— $D \frac{X}{I} + E = M.$		

Table III.

DISEASE CAUSATION.

Lines of treatment.	Responsible authority.	Branch of Science.
<ul style="list-style-type: none"> { Isolation { Segregation. { Quarantine. 	<ul style="list-style-type: none"> { State (D. Os.) { Public Health Acts, { etc., etc. 	<ul style="list-style-type: none"> { Public Health.
<ul style="list-style-type: none"> { Marriage selection. { Race exaltation. { Race sterilisation. { Improved health. { Personal hygiene. { Sera inoculation. { Vaccination. { Antitoxics, etc., etc. 	<ul style="list-style-type: none"> { Medical Officer and { Man. 	<ul style="list-style-type: none"> { Public Health.
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{ Throat and Wounds.	{ Segregation. Isolation. Quarantine. Anti-Toxin.	{ Man and M. O.	{ Yes.
{ Skin and Mucous surfaces.	{ Isolation. Segregation. Cordon. Sanitary Police. Vaccination and Re-vaccination.	{ Man, M. O., and State.	{ Yes.
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The last war with Tipu Sultan

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No doubt the enemy should have been forestalled in the occupation of this place, or an attack on it should have been made by daylight, but Colonel Wellesley with the 33rd Foot and a battalion of Bengal Infantry was ordered to make a night attack on the grove of trees, while Colonel Shaw with another detachment assaulted the ruined village. The following note, written by Wellesley to General Harris on the 5th April, after reviewing his orders, appears to show that he took a clearer view of the tactical situation than his Chief:—"I do not know where you mean the post to be established, and I shall therefore be obliged to you if you will do me the favour to meet me this afternoon in front of the lines and show it to me. In the meantime I will order my battalions to be in readiness. After looking at the tope as I came in just now, it appeared to me that

when you get possession of the bank of the nullah, you have the tope as a matter of course, as the latter is in rear of the former. However, you are the best judge and I shall be ready."

Certainly from the map it appears that it would have been sufficient to occupy the nullah, from whence a flank fire would have enfiladed the tope and the ground on the Seringapatam side of it, and would have rendered it untenable (*vide* map in Journal for October 1905).

The attack took place by night. Colonel Shaw was successful, but Wellesley was received with a tremendous fire of rockets and musketry, failed in his object, lost his way and his force in the darkness, and was struck on the knee by a spent ball; he only found his way back to camp after wandering about for some hours in the night. Some of his men were not so fortunate. Lieutenant FitzGerald of the 33rd was killed, and twelve grenadiers of his regiment were captured by the enemy and cruelly put to death, some by having nails driven into their heads, whilst others had their neck broken by Chettys, a caste who perform feats of strength. The incident illustrates the mistake of carrying out a night attack without previously reconnoitring the ground, which in this instance was intersected with canals for irrigating the betel plantation, and it seems probable that Colonel Wellesley would have suffered professionally had he been a less distinguished person than the brother of the Governor-General. As he told Lord Mornington, he resolved after this never to attack by night a post which had not been reconnoitred by day, a lesson which still holds good in our time and involves a recognised principle in the conduct of such night operations. The Duke of Wellington wrote to Colonel Gurwood (Editor of his Despatches) in 1833:—

"We had not reconnoitred the ground. The tope was on the ene-

my's side of the nullah—thus  I had carried the nullah

quite up to the mark O. My advanced guard under Captain West of the 33rd was beyond it and through the tope, and the lost prisoners on the enemy's side of it. But we could not maintain ourselves in it. In fact we knew nothing about the matter." The following is General Harris's private diary for this day:—

"5th April.—Marched to Seringapatam, rocketed a little on the march. Took up our ground nearly for 'the siege. Concluded the arrangements for detaching Gen. Floyd to Gen. Stuart. Formed parties for the attack of the post occupied formerly by the Bombay troops, and the tope of Sultawn-pettah. Lieut.-Col. Shaw to command the detachment for the Bombay post; Col. Wellesley that of the tope, as being composed of his own people. Remained under great anxiety until near 12 at night, from the fear our troop had fired on each other. Lieut.-Col. Shaw very soon reported himself in possession of the post; but a second firing commenced, and as he had sent to know what had become of the two native battalions, I could not be satisfied but that, in the dark, they had mistaken

each other. It proved that all the firing was from the enemy, H. M.'s 12th Regiment scarcely firing a shot the whole night. Near 12 Col. Wellesley came to my tent in a good deal of agitation, to say he had not carried the tope. It proved that the 33rd with which he attacked, got into confusion and could not be formed, a great pity, as it must be particularly unpleasant to him. Altogether, circumstances considered, we got off very well. Gen. Baird's expedition last night so far answered our expectation as he fell in with a small party of the enemy's horse and cut up 8 or 10 of them, which will tend to prevent their plaguing us with rockets, I trust. He missed his road coming back, although one would have thought it impossible; no wonder night attacks so often fail."

This incident of Wellesley's attack on the tope is of historical interest and of lasting utility; yet we have

Night attacks.

seen in our time the failure of night enterprises owing to similar causes—the neglect to reconnoitre. In modern war undoubtedly movements must frequently take place by night, but they should be carefully planned, and should be undertaken only in case of necessity. Regarding an unfortunate occurrence during the war in South Africa, we are told by the German official historian that "it exhibited all the dangerous symptoms attending night enterprises, and a judicious leader, before he decides on undertaking them, must always bear in mind that the occasions are very rare when the best results can be obtained by night from carefully planned direction of troops in action."

It is easy to show, as by the experiences of the war in Manchuria, that the hours of darkness should be turned to account in bringing troops close up to an adversary posted in a strong position, but great issues can only be fought out by daylight, and night marches, and night operations in general, exhaust the energies of the troops. Those who have failed in such enterprises can comfort themselves with the thought that they have failed in good company. Great leaders have always recognised the danger of night operations.

On the 6th April, Colonel Wellesley carried the tope without difficulty and with trifling loss, and a post was established there. Another lesson, frequently neglected in more recent times, may be drawn from this incident which serves to illustrate the principle that no ground capable of concealing an enemy should be left unoccupied in the vicinity of one's troops.

During the actual assault on Seringapatam on the 4th May,

The pacification of Mysore.

Wellesley remained in command of the reserves in the trenches. He was subsequently present at the discovery of Tipu Sultan's body among the heap of slain defenders at the gateway of the fort. After the fall of the place he was made Governor of Seringapatam, and set about with such energy and method that he restored order in a short time, but not until he had hanged some of the men who were engaged in plunder and rapine. Thus, after complaining on 5th May that soldiers of every regiment in camp were in the town, and advising

General Harris to forbid anyone to leave camp, we find him writing on 6th May: "Plunder is stopped, the fires are all extinguished and the inhabitants are fast returning to their houses." His constant care for his troops was another strong and instructive characteristic of the Duke of Wellington, well worthy of imitation. In this same letter he wrote:—"I shall be obliged if you will order an extra dram and biscuit for the 12th, 33rd and 73rd Regiments who got nothing to eat yesterday, and were wet last night."

Wellesley was nominated by the Governor-General one of the Commissioners for the partition of the conquered territories, and in this capacity had to do with the settlement of pension to officials of the late Sultan, and with the restoration to the throne of the Hindu family whose place had been usurped by Haidar Ali, father of Tipu. With the installation of the young Raja, this work was completed, and the commission was dissolved, when it was recorded of Colonel Wellesley that "his active superintendence, discernment, impartiality, and decision in the arduous and important duties of the civil, as well as the military administration of his command, were such as to have fully warranted his brother's judicious selection, and deserved and obtained the gratitude of the conquered people."

On the 11th September 1799 he was appointed to command the forces in Mysore, an independent command directly under the Governor-General, and on the 6th March 1800 the troops in Malabar and Canara were also placed under him. Although the Muhammadan dynasty had been terminated, and the late Sultan's officers had submitted, there still remained a considerable amount of active military work to be done in Mysore, and no one knew better than Wellesley how to "pacify" refractory people, as when we find him directing Captain Campbell, 74th Regiment:—"There is a place called EyGoor, at the distance of about 4 or 5 coss from Munserabad, which is the residence of the Raja. You will be pleased to destroy it, and hang all persons either in it or Munserabad that you may find in arms." And again, in November, to Major Disney:—"I shall be obliged if you will concert measures with Ram Rao so as to catch some of the plunderers who, it is reported, have appeared near Anantpoor. I am informed that they are Mahrattas from the Savanore country, but it is immaterial from whence they come; if any of them are caught they are to be hanged." One can certainly learn a great deal regarding the best methods for the pacification and administration of conquered and lawless countries from the Wellington Despatches.

Meanwhile a much more serious danger than that due to refractory rajas and wandering marauders threatened the peace of the country. When Seringapatam was captured, many prisoners were found languishing in the dungeons, where the unhappy General Matthews had been forced to take poison, and other British officers and soldiers had been incarcerated. These prisoners were liberated without any enquiry being made, among them a Mahratta trooper named

**Rhoondiah Waugh, king
of the two worlds.**

Dhoondiah Waugh.* This man had been in the service of Haidar Ali, but after the death of that potentate had become a freebooter. However, he gave up plundering and entered Tipu's service but, falling into disfavour, he was imprisoned, made a Musalman, and left in chains in a dungeon until liberated by the British, when he lost no time in leaving Seringapatam, and taking to his former lawless life. He soon collected a numerous band from among the soldiers of fortune who were thrown out of employment on the fall of Tipu Sultan. He had already made a reputation, and in character somewhat resembled Sivaji, who founded the Mahratta nation. Cruel, crafty, personally brave, and possessing some military skill, why should not Dhoondiah Waugh become a second Sivaji? From such small beginnings empires in India have not infrequently been established.

Assuming the high sounding title of king of the two worlds, the freebooter entered the district of Bednore, plundering and exacting tribute in all directions; hundreds flocked to his standard, and he became so far a source of danger to the whole province, that it was found necessary to send a considerable expedition after him. Accordingly two light brigades under Colonels Dalrymple and Stevenson marched from Chitaldrug on the 21st July, and a party of banditti, 200 horse and 400 foot, were cut to pieces and dispersed. Dhoondiah fled across the Tangabhadra river, but was followed up by the two detachments which, after taking by storm two forts he had occupied, encountered the "king of the two worlds" himself in a very strong position, defended by guns. The enemy's horse were driven into the river, and the whole force dispersed, but Dhoondiah made his escape in a boat.

The fugitive crossed into Mahratta territory, where his followers were again dispersed and his camp plundered by Gokla,† an officer of the Peshwa, and Mysore was thus left in peace for a time.

Later on, however, Wellesley was obliged to conduct a regular campaign against this freebooter, who in February 1800 was reported to have the intention of making an attempt to capture the British commander when the latter was out hunting. In May Wellesley was offered command of the Batavian expedition, but felt obliged to refuse it, owing to threatened disorders in his command; in a letter which he wrote to the Governor-General:—"Dhoondiah is certainly a despicable enemy; but from circumstances, he is one against whom we have been obliged to make a formidable preparation. It is absolutely necessary to the peace of this country and of Canara and Malabar that that man should be given up to us." But the

* In the case of proper names, the spelling of the Wellington Despatches has been adopted throughout.

† Gokla was the bravest leader in the Peshwa's army. He fought on our side at the battle of Assay in 1803, but took part with Baji Rao against us in the war of 1817-18. At the combat of Ashti, when he boldly charged a regiment of native cavalry and the 22nd Dragoons, he was killed by a dragoon, fighting bravely to the last.

Poona government were not equal to the task. On the 30th June the king of the worlds attacked and defeated Gokla, dispersed his forces, and took his guns.

Wellesley had, however, already taken the field in person, and went into camp at Hurryhur on 15th June, where we find him writing on the 21st:— "Dhoondiah Waugh is at Savanore with the greater part of his army; a small body of cavalry only are on this side of the Werdah. I yesterday sent a patrol to reconnoitre the fort of Arnee, on the left bank of the Toomboodra, about 6 miles below this place, and I intended to have attacked the fort this morning; it was evacuated, however, in the night, and my troops took possession of it this day."

The force employed against Dhoondiah Waugh consisted of the following:—

Colonel Stevenson commanded the Cavalry.		
1st Brigade of Cavalry—Lieut.-Col. Torin	...	<div> H. M. 19th Light Dragoons. 1st Regt. Native Cavalry. 4th Regt. Native Cavalry. </div>
2nd Brigade of Cavalry—Colonel Pater	...	<div> 25th Light Dragoons. 2nd Regt. Native Cavalry. </div>
1st Brigade of Infantry—Lieut.-Col. Montresor...		<div> H. M. 73rd Regt. H. M. 77th Regt. </div>
2nd Brigade of Infantry—Lieut.-Col. Tolfrey	...	<div> 1st batn. 1st Regt. 1st batn. 8th Regt. 1st batn. 12th Regt. </div>
3rd Brigade of Infantry—Major Capper	...	<div> 2nd batn. 4th Regt. 2nd batn. 2nd Bombay Regt. 1st batn. 4th Bombay Regt. </div>

In a letter to Sir W. Clarke, Wellesley gave the following account of his operations in pursuit of Dhoondiah:—

"On the 24th June the whole of my Corps had crossed the Toombuddra; on the 27th I advanced, and stormed Ranee Bednore.* I then detached towards the frontier of the Nuggur country, cleared that of all Dhoondiah's cavalry, and on the 2nd July, having been joined by some supplies I expected, I advanced to the Werdah. The whole of my detachment had crossed that river on the 11th and I then constructed a redoubt for the security of my boats, and of my communication with the rear.

"On the 12th having heard that Dhoondiah proposed to come down to give me battle, I advanced to seize Savanore, in order that I might have a place of security for my baggage during the time that I might be engaged with him. Accordingly, I got possession of Savanore, and encamped in front of that place. On the 13th Dhoondiah came within 2 coss of my camp, examined it, and retired

* The pass was stormed by the Infantry, while the Cavalry cut off the retreat of the defenders, who numbered 500, most of whom were slain.

to Koondgul. As soon as I heard of this movement, I ordered my detachment to march light, with 5 days' provisions, and I threw my baggage into Savanore. I marched on the 14th to Koondgul; Dhoondiah had fled, and we stormed that place; on the 15th to Luckmaisir, which place was evacuated on our approach; on the 16th to Sirhitty, the siege of which place was raised; on the 17th and 18th, I returned to Savanore to get my baggage, provisions, etc., when Dhoondiah went off from me to the eastward, I wrote to the Mahrattas, who were at Hullihall, to bring them forward, and I was joined by young Goklah on the night of the 19th. I was detained at Savanore by the wet weather, which makes the roads in this country impracticable, until the 22nd; and on the 23rd and 24th I remained in the vicinity of Luckmaisir, to get a supply of bullocks. On the 25th I moved forward to Sirhitty, to form a junction with Lieutenant-Colonel Bowser, but moved on the next day to Gudduk, which was evacuated; the 28th to Moondnagoor; the 29th to Noolgoond and Allagawady. Dhoondiah had for some time encamped at Soon-dootty, and he was crossing his baggage over the Malpoorba at Manowly."

Making a forced march of 26 miles on the 30th July 1800, Wellesley surprised Dhoondiah's camp at three in the afternoon, with his Cavalry destroyed or drove into the river the whole of the enemy's force, and captured the baggage, an elephant, bullocks, camels, numerous horses, and families. The hostile guns got away across the river, but Lieutenants Fitchett and Jackson, with some men of the 73rd and 77th Regiments, swam across, and captured a boat and six guns. Wellesley wrote from here:—"I must halt here to-morrow to refresh a little, having marched every day since the 22nd July, and on the 30th, the day on which I took his baggage, I marched 26 miles which, let me tell you, is no small affair in this country. My troops are in high health and spirits, and their pockets full of money, the produce of plunder." Among the numbers drowned in the Malpoorba was a leader, Bubber Jung, who leaped in, in his armour, and sank. The king of the two worlds himself escaped, but, pursued closely by Colonel Stevenson, left the road strewn with his baggage, the bodies of his followers and animals, and fled into the jungles beyond the sources of the Malpoorba with an army almost reduced to nothing. The career of this remarkable robber chieftain was, however, rapidly drawing to a close. Wellesley had received orders to the effect that "You are to pursue Dhoondiah Waugh wherever you may find him, and hang him on the first tree." But the man whose courage and skill one cannot but admire was to meet no such inglorious fate. The conclusion of this war is best given in the words of the British commander, who wrote to Major Munro from camp at Yepulpuroy on 10th September:—

"I have the pleasure to inform you that I gained a complete victory yesterday, in an action with Dhoondiah's army, in which he was killed, his body was recognised, and was brought into camp on a gun attached to the 19th Dragoons.

"After I had crossed the Malpoorba it appeared to me very clear that if I pressed upon the 'King of the two Worlds,' with my whole force, on the northern side of the Doab, His Majesty would either cross the Toombuddra with the aid of the Patan chiefs, and would then enter Mysore; or he would return in to Savanore, and play the devil with my communications. I therefore determined, at all events, to prevent His Majesty from putting those designs in execution; and I marched with my army to Kanagherry. I sent Stevenson towards Deodroog, and along the Kistna, to prevent him from sending his guns and baggage to his ally the Raja of Soorapoor and I pushed forward the whole of the Marhatta and Mogul Cavalry in one body between Stevenson's corps and mine.

"I marched from Kanagherry on the 8th, left my Infantry at Nowly, and proceeded on with the Cavalry only; and I arrived here on the 9th, the Infantry at Chinnoor, about 15 miles in my rear. The 'King of the World' broke up on the 9th, from Mudgherry, about 25 miles on this side of Raichore, and proceeded towards the Kistna; but he saw Colonel Stevenson's camp, returned immediately, and encamped about 9 miles from hence, between this place and Bunnoo. I had early intelligence of his situation; but the night was so bad, and my horses so much fatigued, that I could not move.

After a most anxious night, I marched in the morning, and met the 'King of the World' with his army, about 5,000 horse, at a village called Conahgull, about 6 miles from hence. He had not known of my being so near him in the night, had thought that I was at Chinnoor, and was marching to the westward with the intention of passing between the Marhatta and Mogul Cavalry and me.

"He drew up, however, in a very strong position, as soon as he perceived me; and the 'victorious army' stood for some time with apparent firmness. I charged them with the 19th and 25th Dragoons, and the 1st and 2nd regiments of Cavalry; and drove them before me till they dispersed, and were scattered over the face of the country. I then returned and attacked the royal camp, and got possession of elephants, camels, baggage, etc., which were still upon the ground. The Mogul and Marhatta Cavalry came up about 11 o'clock; and they have been employed ever since in the pursuit and destruction of the scattered fragments of the 'victorious army.'"

With the destruction of this freebooter, Wellesley's field service in Mysore came to an end, but the experience gained in this campaign afterwards proved of great service to him in the war he conducted against the Mahrattas in 1803. In December 1800, Wellesley proceeded to Trincomalee, having been appointed to the force destined for the expedition to Egypt, subsequently commanded by

Note.—In Dhoondiah's camp was found his favourite child, Salabat Khan, a boy about four years old, who was subsequently maintained by Wellesley, and placed in service of the Raja of Mysore. He died of cholera in 1822.

General Baird. But in April 1801 he returned to his command in Mysore, and passed two uneventful years there, organising the civil and military administration of the country, of which he gave a detailed account to the Governor-General in July 1804.

In March 1803 he was appointed to command a division operating against the Mahrattas, his victorious campaign against whom, including the battles of Assaye and Argaum, has already been fully described in these pages. In November 1804, when the Mahratta war had been brought to a successful conclusion, he returned to Seringapatam, but in the following March he left India, to continue his glorious career on a larger stage, and with a success for which his military exploits and capacity for administration displayed in the East had fully prepared him. Those who wish to learn more details of his administration in Mysore cannot do better than peruse his despatches written while in that country.

With regard to his despatches, the latest historian * of the life of the Duke of Wellington has truly written :—"Taken as a whole, this correspondence during Wellesley's eight years of Indian service is no whit inferior in style and scope to that of his later years. His insight into native character and the wants of the people—his conception of the right policy to pursue alike in the interests of the British power and the native rulers—his reluctance to appeal to arms when the end could be attained by peaceful means—above all, his resolute adherence to the principles of honour and his contempt for indirect emolument—appear as clearly in these papers as his solicitude for the welfare of his troops and minute attention to organisation of transport, supplies, and equipment. As a literary work, the whole series of the despatches from 1794 to 1832, filling the greater part of 15,000 large octavo pages, closely printed, forms one of the most remarkable achievements from a single hand that ever were penned. There is hardly an ambiguous sentence in the whole of it. When one reflects upon the variety of agitating and fatiguing circumstances under which the military part of the correspondence was conducted, it is impossible not to marvel at the cool head and iron frame which enabled the writer to set them at defiance."

The story of the military and civil administration of Mysore by Colonel Wellesley is not merely of academic interest. His conduct of the campaign against Dhoondiah Waugh, and his bold and skilful tactics when in contact with the enemy are both interesting and instructive. Nor are the endurance and valour of the British troops without their lessons. In a trying climate, with none of the luxuries and conveniences of life with which we are nowadays supplied, the British soldiers had to force their way through dense forests, across rivers swollen in the rainy season, and over mountain passes worn by rushing torrents and dark with jungle. They marched many hundreds of miles, and captured many guns; they stormed forts that seemed impregnable to all but the skill of British com-

* Sir Herbert Maxwell.

manders, and the valour of British soldiers ; and when the enemy appeared like a dark cloud upon the horizon, lit up by the flash of arms and accompanied by the rumbling thunder of distant drums, they charged down upon him without hesitation, and dispersed him in every direction.

It was deeds such as these that won us our Empire in the East, and have enabled us to hold it through the stress and storm of a hundred years. These are lessons of value to all Englishmen. Nor is the least lesson to be found in the career of the illustrious soldier who left his great name and example as an imperishable monument, exciting others to like deeds of glory, and serving at once to adorn, defend, and perpetuate the existence of our Empire among the ruling nations of the earth.

NIGHT ATTACKS, AND THE LESSONS OF HISTORY.

BY CAPT. P. S. F. CLARIDGE, 28TH LIGHT CAVALRY.

1.

While the progress made in modern armaments has called forth notable changes in the tactical formations of the battlefield, it must be admitted that the actual night assault, and by this I mean, not the marches carried out under cover of darkness with a view to delivering the attack at dawn, but the night assault itself, is still largely surrounded with the glamour of uncertainty. For while we gain sufficient knowledge of the former, *i.e.*, the ordinary formations by day, from a study of the late Russo-Japanese War, and from our own recent experiences in South Africa, we must search much deeper into the pages of history, before we can point, with any degree of certainty, to examples of night fighting, which we can afford to pass over in silence as throwing no light upon our endeavours towards improvement in the future.

It would, for instance, be absurd to compare the disposition of the British Army at Waterloo with, say, that of the Boer forces at Colenso, or the Russians at Mukden; whilst, on the other hand, an eye witness' account of a successful night sortie made by the Russians, during the Siege of Port Arthur, against "P" fort, and of their subsequent expulsion by the Japanese reserves, reads, as regards its tactical features, like a page out of Napier*.

2.

The country which by day is familiar to our eyes and over which the manœuvring of troops appears exceedingly simple, is vested at night with new dangers and obstacles. The sudden appearance of a ditch, which a few hours before appeared an obstacle not worth consideration, may assume at night gigantic proportions to the startled senses of the troops, stumbling unexpectedly upon it; and its occupation by even a small hostile force may seriously jeopardise the action of the whole column. Incomplete reconnaissance, a wrong or careless adjustment of the compass, may both cause the total failure of the attack; and these are only a few of the multitudinous reasons which give to these operations that sense of insecurity which makes some of the most able soldiers regard their undertaking with reluctance.

But so long as the arguments of nations are settled on the arena of the battlefield, so long must the study and careful preparation for

* The Siege of Port Arthur, by D. A. James.

night operations form an integral and important part of the soldier's training.

In every campaign there will always be occasions when the night training of the troops will be called into question, and the Commander, who in that case, can thoroughly rely upon their discipline and upon the intelligence of their officers, will be far on his way to the surmounting of the task before him.

History shows us that the most careful and painstaking reconnaissance, the most well-planned distribution of the force, and the most skilful leading, will be of no avail without the silent and disciplined support of the rank and file. That discipline, which inspires the soldiers to obey the commands of his officer as unhesitatingly during the silent and steady night advance, as during that period when the sudden outburst of the enemy's musketry opens upon the close ranks of the attack, is one which the bravest man may well aspire to attain. It is discipline such as this that is required to successfully carry through a night assault.

The character, courage and ability of the officer directing a night attack constitutes, equally with the discipline of the men, a prime factor in the success of the operations. Upon him will devolve the arrangements for the careful reconnaissance of the approaches to the objective, both by day and night; he must decide upon the exact time at which the column or columns must advance in order to arrive simultaneously at the position or positions to be assaulted; he must himself see to the distribution of his force, and to the strength and employment of his reserves; finally, in the case of the success or non-success of the assault, upon him alone will devolve the responsibility of deciding upon what further steps are to be taken. Perhaps in no instance in war, save in that of a retreat in the face of a fresh and powerful adversary, is there given so much to the personal character of a leader, the power to influence for good or ill the behaviour of those under him, as during the stress of a desperate night assault. The knowledge that their leader is a man of action and character, and has the courage of his opinions, will exercise a magnetic influence over his subordinates, and, other things being equal, will give just that flip to the operation which should carry it to victory.

3.

The study of Campaigns ancient and modern, shows us upon what various occasions night attacks may be undertaken which may be summarised shortly as follows:—

- (1) In siege warfare (Badjoz 1812; Sevastapol, 1854-5; Kars, 1877; Port Arthur 1904)
- (2) In attempts to break the circle of investment of a besieging force (not included in above)
(Münch 1794, Fredericks 1849, Inkerman, 1854)
- (3) Attack upon outposts (Quebec 1759, Mörshausen 1794, Spion Kop 1900)

- (4) Attacks upon isolated posts on the lines of communication (sometimes called raids), (Manassas Junction 1862; S. Africa, 1900-2).
- (5) Taking advantage of a lack of vigilance on the part of the adversary (Hochkirsch, 1758).
- (6) To avoid the loss consequent upon an attack by day. (Perches Forts, 1871; Schipka Pass, 1877; Duppel Forts, 1849).
- (7) In savage warfare (Kassassin).

These instances though, not exhaustive, are sufficiently comprehensive, and from their number we will briefly summarise two, the reasons for the success and unsuccess of which are peculiarly instructive.

During the Seven Years' War the Austrians, under Field Marshal Daun, while retiring from Prussia into Bohemia pursued by Frederick the Great, halted on the 7th October 1758, in the neighbourhood of Lobau and threw up entrenchments. Three days later the Prussians arrived in front of the position, and Frederick taking for granted that this display was merely intended to check the ardour of his pursuit, halted himself and pitched Camp. The front of the Prussian position, which was barely more than a mile from the Austrian outposts, had its right extending to the village of Hochkirsch, whence it was refused, almost at right angles, so as to face at a short distance the dense Futaie Wood, which covered the slopes of the ridges running parallel to the Prussian right flank.

The Futaie Wood was held by the Austrian outposts.

In spite of the re-iterated warnings of his Generals, the Prussian King, in his contempt for Marshal Daun's well-known dilatoriness of action, refused to correct his dispositions.

On the night of 13th/14th October the Austrian General, who, cautious as he was, was an able soldier, massing 30,000 men under cover of the Futaie Wood, launched them against the Prussian right, while sending a large force of cavalry to harass their rear, and holding Frederick in front by an ample display of force. The attack, unexpected as it was, was most stubbornly contested; but victory lay with the Austrians.

The Prussians lost Marshal Keith, several Princes, and 8,000 men, together with 28 colours and 100 guns. The Austrian's loss amounted to about 5,500 men, and 10 guns. The Battle of Hochkirsch provides us with two of the important factors necessary for the successful carrying out of night operations. Firstly, the moral courage of the Commander; secondly, the discipline of the troops; but in this instance each side can lay claim to one of them. Had Marshal Daun not had the moral courage to take advantage of the situation offered him by the Prussian King's faulty dispositions, such an opportunity would never again have presented itself, for Frederick had already completed his own arrangements for the turning of the Austrian right on the 14th October. Moreover, the Austrian General, by attacking at night, had gained his object with

a loss, smaller at least by a half, than would have been the case had he attacked Frederick's chosen troops by day.

As regards the second factor, it was the discipline and skilful handling of the Prussian troops by their Subordinate Officers, which alone saved their army from annihilation.

In the great night attack on the Shipka Pass, 16th-17th September 1877, the failure of the Turks was due to many reasons which are full of instruction to us. In this instance Sublimean Pasha made his attack in four columns, distributed as follows: the principal column, composed of picked troops, was directed against Mount Nicholas which constituted the key of the Russian position; another column was to advance on the right and another on the left of the principal column; to the fourth column was assigned the task of dealing with a battery posted on the extreme right of the Russian defences, and the advance of this latter column was to coincide with that of the two columns acting on either flank of the principal column. The troops composing the three secondary columns were not specially selected, as in the case of the principal column; their signal to advance was to be the arrival of the principal column on the summit of Mount Nicholas; in other words the outburst of musketry fire which would greet the latter's appearance before the Russian entrenchments. *No force was directed as a reserve to any of the columns.* The lines of advance of the secondary columns had been very inadequately reconnoitred.

What happened was only to be expected. The principal column advanced at 2 A.M., and behaving with great gallantry carried the first line of the Russian entrenchments at 3 A.M. The second, third, and fourth columns, owing to the vagueness of the signal for their co-operation, either advanced too late, or through their ignorance of the direction, due to the inadequate reconnoissance, wandered aimlessly about, only scattered groups getting in touch with the principal column.

The latter column after clinging desperately to their position until 11 A.M., 17th September, without support, were unable to withstand the counter attacks of the intact Russian Reserves and were forced to retire, their magnificent courage having formed the one bright spot in this story of ignorance and incompetency.

Sublimean Pasha having during the previous month failed to capture the pass in an attack by day, on which occasion he lost 10,000 men, was more than justified in trusting his fortunes to a night attack, but having lain with his army for nearly a month in face of the Russian position when there was ample opportunity for arranging for the reconnoissance of its approaches, he could not in permitting the attack without this very necessary precaution, be open to severe censure.

The signal too for the advance of the lateral columns was vague in the extreme, he would have been wiser had he taken a lesson out of Wellington's book, and fired a rocket as the signal for the assault.

It is also hard to understand his reasons in restraining the advance of the lateral columns, until the principal column was in hand-grips with the Russians.

But allowing him all these mistakes, the operation might have, even then, been successful had he employed a strong reserve to the principal column to meet the counter-attacks of the enemy's. For unsupported as it was, it was not, even then, until late into the morning that it was forced to relinquish its position on the hill. For years before this period the necessity of reserves to the storming columns had been fully recognised, and it appears inexplicable how the Turkish General could have committed himself to such an extent as to dispense with them altogether.

The employment of co-operating columns, even when their action is timed and arranged for with the nicest accuracy, carries with it always a certain amount of risk. The difficulty of communication at night, especially when the columns are some distance apart, may cause the successful action of one to be jeopardised by the inaction or repulse of another, without either column being aware of it, as witness the affair of Roches-Clay in 1871 which failed for these very reasons.

A German Officer, * who has made a study of the tactics of night attacks, advocates that, if it should be found necessary to assault different parts of the position at the same time, the different assaulting columns should march concentrated to, what we in England call, "the position of deployment" or position at which the actual formations for the assault are adopted, and that then, and not before, they should move to their respective lateral positions. Naturally this suggestion is applicable principally to movements in open country. There remains another objection to the use of co-operating columns which is, that it necessitates the dispersion of command among two or three officers, who, however able they may be individually, cannot be expected, should occasion arise, to act as if they were all of exactly the same mind, or as if they possessed the same amount of influence over their respective commands, the influence necessary to bring forth all the highest qualities of their men.

Whatever the effect that the use of searchlight projectors may have in exposing the approach of a Storming Column in siege warfare, and they had a fair amount of success and insuccess at the siege of Port Arthur, they have not yet reached that state of perfection that will admit of their employment as a necessary addition to every force in the field.

A pamphlet † which appeared on this subject, and an article describing a transportable searchlight which has been used in Germany, show, however, that serious attention is being devoted to this matter; but it will be some years before we can hope that

* Colonel Cardinal V. Widdern.

† *La lumière électrique*, by Clarinval.

to Koondgul. As soon as I heard of this movement, I ordered my detachment to march light, with 5 days' provisions, and I threw my baggage into Savanore. I marched on the 14th to Koondgul, Dhoondiah had fled, and we stormed that place; on the 15th to Luckmaisir, which place was evacuated on our approach, on the 16th to Sirhitty, the siege of which place was raised, on the 17th and 18th, I returned to Savanore to get my baggage, provisions, etc., when Dhoondiah went off from me to the eastward, I wrote to the Mahrattas, who were at Hullihall, to bring them forward, and I was joined by young Goklah on the night of the 19th. I was detained at Savanore by the wet weather, which makes the roads in this country impracticable, until the 22nd; and on the 23rd and 24th I remained in the vicinity of Luckmaisir, to get a supply of bullocks. On the 25th I moved forward to Sirhitty, to form a junction with Lieutenant-Colonel Bowser, but moved on the next day to Gudduk, which was evacuated, the 28th to Moondnagoor; the 29th to Nooldah and Allagawady. Dhoondiah had for some time encamped at Sooddooty, and he was crossing his baggage over the Malpoorba at Manowly."

Making a forced march of 26 miles on the 30th July 1800, Wellesley surprised Dhoondiah's camp at three in the afternoon with his Cavalry destroyed or drove into the river the whole of the enemy's force, and captured the baggage, an elephant, 6000 camels, numerous horses, and families. The hostile guns got away across the river, but Lieutenants Fitchett and Jackson, with a detachment of the 73rd and 77th Regiments, swam across, and captured a boat and six guns. Wellesley wrote from here:—"I must halt here to-morrow to refresh a little, having marched every day since the 22nd July, and on the 30th, the day on which I took his baggage. I marched 26 miles which, let me tell you, is no small affair in this country. My troops are in high health and spirits, and their pockets full of money, the produce of plunder." Among the numbers drowned in the Malpoorba was a leader, Babbar Jung, who, dressed in his armour, and sunk. The king of the two worlds himself escaped, but, pursued closely by Colonel Stevenson, left the road strewn with his baggage, the bodies of his followers and animals, and fled into the jungles beyond the sources of the Malpoorba with an army almost reduced to nothing. The career of this remarkable robber chieftain was, however, rapidly drawing to a close. Wellesley had received orders to the effect that "You are to pursue Dhoondiah Wagh wherever you may find him, and hang him on the first tree." But the man whose courage and skill one cannot but admire was to meet no such inglorious fate. The conclusion of this war is best given in the words of the British commander, who wrote to Major Munro from camp at Yerpuray on 10th September—

"I have the pleasure to inform you that I gained a complete victory yesterday in an action with Dhoondiah's army in which he was killed his body was recognised and was brought into camp on a gun attached to the 19th Dragoons."

"After I had crossed the Malpoorba it appeared to me very clear that if I pressed upon the 'King of the two Worlds,' with my whole force, on the northern side of the Doab, His Majesty would either cross the Toombuddra with the aid of the Patan chiefs, and would then enter Mysore; or he would return in to Savanore, and play the devil with my communications. I therefore determined, at all events, to prevent His Majesty from putting those designs in execution; and I marched with my army to Kanagherry. I sent Stevenson towards Deodroog, and along the Kistna, to prevent him from sending his guns and baggage to his ally the Raja of Soorapoor and I pushed forward the whole of the Marhatta and Mogul Cavalry in one body between Stevenson's corps and mine.

"I marched from Kanagherry on the 8th, left my Infantry at Nowly, and proceeded on with the Cavalry only; and I arrived here on the 9th, the Infantry at Chinnoor, about 15 miles in my rear. The 'King of the World' broke up on the 9th, from Mudgherry, about 25 miles on this side of Raichore, and proceeded towards the Kistna; but he saw Colonel Stevenson's camp, returned immediately, and encamped about 9 miles from hence, between this place and Bunnoo. I had early intelligence of his situation; but the night was so bad, and my horses so much fatigued, that I could not move.

After a most anxious night, I marched in the morning, and met the 'King of the World' with his army, about 5,000 horse, at a village called Conahgull, about 6 miles from hence. He had not known of my being so near him in the night, had thought that I was at Chinnoor, and was marching to the westward with the intention of passing between the Marhatta and Mogul Cavalry and me.

"He drew up, however, in a very strong position, as soon as he perceived me; and the 'victorious army' stood for some time with apparent firmness. I charged them with the 19th and 25th Dragoons, and the 1st and 2nd regiments of Cavalry; and drove them before me till they dispersed, and were scattered over the face of the country. I then returned and attacked the royal camp, and got possession of elephants, camels, baggage, etc., which were still upon the ground. The Mogul and Marhatta Cavalry came up about 11 o'clock; and they have been employed ever since in the pursuit and destruction of the scattered fragments of the 'victorious army.'"

With the destruction of this freebooter, Wellesley's field service in Mysore came to an end, but the experience gained in this campaign afterwards proved of great service to him in the war he conducted against the Mahrattas in 1803. In December 1800, Wellesley proceeded to Trincomalee, having been appointed to the force destined for the expedition to Egypt, subsequently commanded by

Note.—In Dhoondiah's camp was found his favourite child, Salabat Khan, a boy about four years old, who was subsequently maintained by Wellesley, and placed in service of the Raja of Mysore. He died of cholera in 1822.

General Baird. But in April 1801 he returned to his command in Mysore, and passed two uneventful years there, organising the civil and military administration of the country, of which he gave a detailed account to the Governor-General in July 1804.

In March 1803 he was appointed to command a division operating against the Mahrattas, his victorious campaign against whom, including the battles of Assaye and Argaum, has already been fully described in these pages. In November 1804, when the Mahratta war had been brought to a successful conclusion, he returned to Seringapatam, but in the following March he left India, to continue his glorious career on a larger stage, and with a success for which his military exploits and capacity for administration displayed in the East had fully prepared him. Those who wish to learn more details of his administration in Mysore cannot do better than peruse his despatches written while in that country.

With regard to his despatches, the latest historian * of the life of the Duke of Wellington has truly written :—"Taken as a whole, this correspondence during Wellesley's eight years of Indian service is no whit inferior in style and scope to that of his later years. His insight into native character and the wants of the people—his conception of the right policy to pursue alike in the interests of the British power and the native rulers—his reluctance to appeal to arms when the end could be attained by peaceful means—above all, his resolute adherence to the principles of honour and his contempt for indirect emolument—appear as clearly in these papers as his solicitude for the welfare of his troops and minute attention to organisation of transport, supplies, and equipment. As a literary work, the whole series of the despatches from 1794 to 1832, filling the greater part of 15,000 large octavo pages, closely printed, forms one of the most remarkable achievements from a single hand that ever were penned. There is hardly an ambiguous sentence in the whole of it. When one reflects upon the variety of agitating and fatiguing circumstances under which the military part of the correspondence was conducted, it is impossible not to marvel at the cool head and iron frame which enabled the writer to set them at defiance."

The story of the military and civil administration of Mysore by Colonel Wellesley is not merely of academic interest. His conduct of the campaign against Dhoondiah Waugh, and his bold and skilful tactics when in contact with the enemy are both interesting and instructive. Nor are the endurance and valour of the British troops without their lessons. In a trying climate, with none of the luxuries and conveniences of life with which we are nowadays supplied, the British soldiers had to force their way through dense forests, across rivers swollen in the rainy season, and over mountain passes worn by rushing torrents and dark with jungle. They marched many hundreds of miles, and captured many guns; they stormed forts that seemed impregnable to all but the skill of British com-

* Sir Herbert Maxwell.

manders, and the valour of British soldiers ; and when the enemy appeared like a dark cloud upon the horizon, lit up by the flash of arms and accompanied by the rumbling thunder of distant drums, they charged down upon him without hesitation, and dispersed him in every direction.

It was deeds such as these that won us our Empire in the East, and have enabled us to hold it through the stress and storm of a hundred years. These are lessons of value to all Englishmen. Nor is the least lesson to be found in the career of the illustrious soldier who left his great name and example as an imperishable monument, exciting others to like deeds of glory, and serving at once to adorn, defend, and perpetuate the existence of our Empire among the ruling nations of the earth.

NIGHT ATTACKS, AND THE LESSONS OF HISTORY.

BY CAPT. P. S. F. CLARIDGE, 28TH LIGHT CAVALRY.

1.

While the progress made in modern armaments has called forth notable changes in the tactical formations of the battlefield, it must be admitted that the actual night assault, and by this I mean, not the marches carried out under cover of darkness with a view to delivering the attack at dawn, but the night assault itself, is still largely surrounded with the glamour of uncertainty. For while we gain sufficient knowledge of the former, *i.e.*, the ordinary formations by day, from a study of the late Russo-Japanese War, and from our own recent experiences in South Africa, we must search much deeper into the pages of history, before we can point, with any degree of certainty, to examples of night fighting, which we can afford to pass over in silence as throwing no light upon our endeavours towards improvement in the future.

It would, for instance, be absurd to compare the disposition of the British Army at Waterloo with, say, that of the Boer forces at Colenso, or the Russians at Mukden; whilst, on the other hand, an eye witness' account of a successful night sortie made by the Russians, during the Siege of Port Arthur, against "P" fort, and of their subsequent expulsion by the Japanese reserves, reads, as regards its tactical features, like a page out of Napier*.

2.

The country which by day is familiar to our eyes and over which the manœuvring of troops appears exceedingly simple, is vested at night with new dangers and obstacles. The sudden appearance of a ditch, which a few hours before appeared an obstacle not worth consideration, may assume at night gigantic proportions to the startled senses of the troops, stumbling unexpectedly upon it; and its occupation by even a small hostile force may seriously jeopardise the action of the whole column. Incomplete reconnaissance, a wrong or careless adjustment of the compass, may both cause the total failure of the attack; and these are only a few of the multitudinous reasons which give to these operations that sense of insecurity which makes some of the most able soldiers regard their undertaking with reluctance.

But so long as the arguments of nations are settled on the arena of the battlefield, so long must the study and careful preparation for

* The Siege of Port Arthur, by D. A. James.

night operations form an integral and important part of the soldier's training.

In every campaign there will always be occasions when the night training of the troops will be called into question, and the Commander, who in that case, can thoroughly rely upon their discipline and upon the intelligence of their officers, will be far on his way to the surmounting of the task before him.

History shows us that the most careful and painstaking reconnaissance, the most well-planned distribution of the force, and the most skilful leading, will be of no avail without the silent and disciplined support of the rank and file. That discipline, which inspires the soldiers to obey the commands of his officer as unhesitatingly during the silent and steady night advance, as during that period when the sudden outburst of the enemy's musketry opens upon the close ranks of the attack, is one which the bravest man may well aspire to attain. It is discipline such as this that is required to successfully carry through a night assault.

The character, courage and ability of the officer directing a night attack constitutes, equally with the discipline of the men, a prime factor in the success of the operations. Upon him will devolve the arrangements for the careful reconnaissance of the approaches to the objective, both by day and night; he must decide upon the exact time at which the column or columns must advance in order to arrive simultaneously at the position or positions to be assaulted; he must himself see to the distribution of his force, and to the strength and employment of his reserves; finally, in the case of the success or non-success of the assault, upon him alone will devolve the responsibility of deciding upon what further steps are to be taken. Perhaps in no instance in war, save in that of a retreat in the face of a fresh and powerful adversary, is there given so much to the personal character of a leader, the power to influence for good or ill the behaviour of those under him, as during the stress of a desperate night assault. The knowledge that their leader is a man of action and character, and has the courage of his opinions, will exercise a magnetic influence over his subordinates, and, other things being equal, will give just that filip to the operation which should carry it to victory.

3.

The study of Campaigns, ancient and modern, shows us upon what various occasions night attacks may be undertaken, which may be summarised shortly as follows:—

- (1) In siege warfare (Badajoz, 1812; Sevastapol, 1854-5; Kars, 1877; Port Arthur, 1904).
- (2) In attempts to break the circle of investment of a besieging force (not included in above).
(Menin, 1794; Frederika, 1849; Inkerman, 1854).
- (3) Attack upon outposts (Quebec, 1759; Morsheim, 1794; Spion Kop, 1900).

- (4) Attacks upon isolated posts on the lines of communication (sometimes called raids), (Manassas Junction 1862; S. Africa, 1900-2).
- (5) Taking advantage of a lack of vigilance on the part of the adversary (Hochkirsch, 1758).
- (6) To avoid the loss consequent upon an attack by day. (Perches Forts, 1871; Schipka Pass, 1877; Duppel Forts, 1849).
- (7) In savage warfare (Kassassin).

These instances though, not exhaustive, are sufficiently comprehensive, and from their number we will briefly summarise two, the reasons for the success and unsuccess of which are peculiarly instructive.

During the Seven Years' War the Austrians, under Field Marshal Daun, while retiring from Prussia into Bohemia pursued by Frederick the Great, halted on the 7th October 1758, in the neighbourhood of Lobau and threw up entrenchments. Three days later the Prussians arrived in front of the position, and Frederick taking for granted that this display was merely intended to check the ardour of his pursuit, halted himself and pitched camp. The front of the Prussian position, which was barely more than a mile from the Austrian outposts, had its right extending to the village of Hochkirsch, whence it was refused, almost at right angles, so as to face at a short distance the dense Futaie Wood, which covered the slopes of the ridges running parallel to the Prussian right flank.

The Futaie Wood was held by the Austrian outposts.

In spite of the re-iterated warnings of his Generals, the Prussian King, in his contempt for Marshal Daun's well-known dilatoriness of action, refused to correct his dispositions.

On the night of 13th/14th October the Austrian General, who, cautious as he was, was an able soldier, massing 30,000 men under cover of the Futaie Wood, launched them against the Prussian right, while sending a large force of cavalry to harass their rear, and holding Frederick in front by an ample display of force. The attack, unexpected as it was, was most stubbornly contested; but victory lay with the Austrians.

The Prussians lost Marshal Keith, several Princes, and 8,000 men, together with 28 colours and 100 guns. The Austrian's loss amounted to about 5,500 men, and 10 guns. The Battle of Hochkirsch provides us with two of the important factors necessary for the successful carrying out of night operations. Firstly, the moral courage of the Commander; secondly, the discipline of the troops; but in this instance each side can lay claim to one of them. Had Marshal Daun not had the moral courage to take advantage of the situation offered him by the Prussian King's faulty dispositions, such an opportunity would never again have presented itself, for Frederick had already completed his own arrangements for the turning of the Austrian right on the 14th October. Moreover, the Austrian General, by attacking at night, had gained his object with

a loss, smaller at least by a half, than would have been the case had he attacked Frederick's chosen troops by day.

As regards the second factor, it was the discipline and skilful handling of the Prussian troops by their Subordinate Officers, which alone saved their army from annihilation.

In the great night attack on the Schipka Pass, 16th/17th September 1877, the failure of the Turks was due to many reasons which are full of instruction to us. In this instance Suleiman Pasha made his attack in four columns, distributed as follows: the principal column, composed of picked troops, was directed against Mount Nicholas which constituted the key of the Russian position; another column was to advance on the right and another on the left of the principal column; to the fourth column was assigned the task of dealing with a battery posted on the extreme right of the Russian defences, and the advance of this latter column was to coincide with that of the two columns acting on either flank of the principal column. The troops composing the three secondary columns were not specially selected, as in the case of the principal column; their signal to advance was to be the arrival of the principal column on the summit of Mount Nicholas; in other words, the outburst of musketry fire which would greet the latter's appearance before the Russian entrenchments. *No force was detailed as a reserve to any of the columns.* The lines of advance of the secondary columns had been very inadequately reconnoitred.

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It is also hard to understand his reasons in restraining the advance of the lateral columns, until the principal column was in hand-grips with the Russians.

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* Colonel Cardinal V. Widdern.

† *La lumière électrique*, by Clarinval.

their employment on the battlefield will necessitate any serious changes in our present training for night operations.

Jomini, in his *Art of War*, says that with study every officer can acquire a knowledge of war; but that there is not given to all the ability to put such knowledge to the proof when it comes to the battlefield. In the chapter on Night Operations in our book of Combined Training, the knowledge how to act is clearly explained; but only constant training in peace time can enable us, and the men under us, to acquire that sense of confidence in ourselves that will enable us to act readily and fearlessly on the day of battle.

A RESERVE OF SUBALTERN OFFICERS FOR THE INDIAN ARMY.

BY CAPT. E. F. ORTON, 37TH LANCERS.

SOME PRELIMINARY CONSIDERATIONS.

- (i) The Reserve officers must be of good birth, and good education. No one is quicker than the sepoy, in noting deficiencies in education or manner, and moral counts very high.
- (ii) Reserve officers should be trained by actual experience in India, and with native troops. This experience and 'insight' can never be forgotten. A few weeks at a dépôt, or on the lines of communication, after mobilization would suffice to brush up Hindustani and military duties.
- (iii) Candidates must be at least 20 years of age to stand the climate.
- (iv) Reserve pay can be little more than a retaining fee, but provides a method of registration and a slight hold over the Reserve officers.
- (v) Reserve Training is not considered essential. Its compulsory inclusion would be a certain cause of unpopularity.
- (vi) Reserve officers drawn from British regiments in India, would only deplete those regiments in the time of stress.

Officers of more than 8 or 10 years' service, would supersede a great many Indian army officers. The heavy casualties of a big war, might then leave a British service officer, the senior (and commanding) officer of a native regiment.

Selfish motives, in any case, would make this scheme most unpopular with officers of the Indian army.

SUGGESTED SCHEME.

1. Sources of supply of 50 officers per annum:—

<i>From British militia.</i>				
20 officers	...	...	...	20
<i>From South African local forces.</i>				
From mounted corps	3	}	...	5
From dismounted corps	2			
<i>From Australian local forces.</i>				
From mounted corps	10	}	...	15
From dismounted corps	5			
<i>From New Zealand local forces.</i>				
From mounted corps	7	}	...	10
From dismounted corps	3			
				50

If sufficient colonial candidates were not forthcoming, extra vacancies could be allotted to militia candidates from Home.

2. Ages, and method of selection :—

From British militia.

At least 20 years of age.

Not over 23 years of age.

Twenty commissions offered to candidates competing in the September militia competitive examination, for commissions in the Regular Forces.

Current conditions, including medical tests.

There are many very good men, who just fail to get into the Regular Forces, and who drift off to the colonies. There are also some who cannot afford to live in British regiments.

From South African, Australian, and New Zealand local forces.

At least 20 years of age.

Not over 23 years of age.

Candidates to be nominated by G. O. C. local forces.

Conditions.

Good education.

Two years service in local forces, *including service in the ranks.* Medical tests, equivalent to standard for candidates for British Regular Forces.

3. *Training* :—

The 50 selected candidates to be commissioned as "Reserve 2nd-Lieutenants," and be provided with passage to India; arriving in India about the end of November.

For the first 6 months to be attached to British infantry regiments in India—December to May. The 50 Reserve 2nd-Lieutenants then to be assembled at some centre, such as Deolali, where existing spare accommodation will be available for a 4 months' garrison class—June to September.

SYLLABUS.

Elementary sketching and map reading.

Tactical training, and elementary field fortification.

Military history.

Military law.

Musketry.

Hindustani, etc.

In October to be posted to various native regiments, 20 to cavalry, and 30 to infantry. Preferably to regiments serving in the North or N.-W. of India.

The proportion for cavalry may seem unduly high. But in a big war, casualties among cavalry officers will be far harder to replace. In addition, some might be necessary to allot to improvised mounted corps, from Australia and New Zealand. On the completion of 3 years' service, to be placed on the "Reserve List of Subalterns for the Indian army."

Qualification for promotion to the rank of "Reserve Lieutenant," on the completion of 3 years' service.

Satisfactory report by D. A. A. G., garrison class.

Satisfactory report by O. C. native regiment.

H. S. Hindustani.

Three years' training in India is considered a minimum, to qualify Subalterns to serve with native troops.

4. *Uniform* :—

Mess kit, as for officers of the "Unattached List."

Remainder, khaki serge and khaki drill only.

Officers to provide their own Sam-Brown belt, sword, revolver, etc.

All the above kit is obtainable in India, on joining; and practically, would be covered by the outfit allowance of £ 40.

5. *Pay and Allowances* :—

Outfit allowance, when first commissioned £ 40.

Rates of pay Rs. 300 (= £ 20) per month from date of first commission.

Rs. 350 per month while attached to a native regiment.

Haggling over lesser rates of pay, "till date of landing in India", etc., would save very little, and do more harm than good, especially with colonial candidates.

Eligible for language rewards, under current Indian Army Regulations.

Reserve 2nd-Lieutenants to pay no entrance mess subscriptions to units, and annual subscriptions only while attached.

Bonus to officers drafted to the "Reserve List of Subalterns for the Indian Army," on completion of three years' service.

Reserve Lieutenant—£ 300—an incentive to qualify for this rank.

Reserve 2nd-Lieutenant—£ 200 :

Provided the officer signs an agreement, to live in India, South Africa, Australia, or New Zealand, etc.

Free passage to be provided to South Africa, Australia, or New Zealand.

Reserve Pay.

I.—Reserve—till 32 years of age.	At the end of 4th year, since first commission ...	£100 *
	At the end of 5th year, since first commission ...	£50 *
	At the end of 6th and each subsequent year, till attaining the age of 32 ...	£ 25
On attaining the age of 32, if certified medically fit, "Reserve Lieutenants" be allowed to join the II Reserve, and receive £ 25 per annum till 36 years of age, when retired with the rank of Captain.		
II.—Reserve—32—36 years of age.		

* Includes portion of Bonus, in deferred instalments, gives a better hold over them and lessens the chance of squandering all the money in a "bust."

The Indian Government would relinquish any further claim on their services, on attaining the age of 36. They would then form a useful reserve for the colonial local forces.

6. For service in India, the I Reserve of officers, to be liable to be called out, in any great emergency ; and the II Reserve, on the outbreak of any big war.

Rate of pay when thus called out, Rs. 450 (= £30) per month, This rate would compensate them for any losses in their civil employment.

On mobilization, " Reserve " officers would be brought in junior of their rank.

7. It is calculated that these terms of service would attract a very good class of men, both from Home, and from the colonies named.

In England, there are many well educated sons of professional men, etc., who have little or no capital for their start in life, and who would prefer a life in one of the colonies, to life in an office at Home.

Parents would be put to very little expense. After three years of a good life and a good training in India, these young men would be better fitted to hold their own in the colonies. The Bonus and the reserve pay would enable them to make a good start in civil life.

A few might settle down as planters, etc., in India or Ceylon. But the majority would be almost certain to proceed to Australia or New Zealand, and would certainly find employment there.

It would make a capital opening for fathers who do not know what to do with their sons, soon after these have left school.

Naturally, the majority of colonial candidates would return to their own Homes. Well-to-do colonial parents would be glad of such an opportunity of giving their sons a chance of seeing something of the world before settling down in life.

The three years' training in the school of practical soldiering, in India, would be quite sufficient to make them into good Subaltern officers, and they would still be very useful officers for the Indian army, in an emergency, up to the ages of 32—36. The services of " Reserve " officers would be welcomed by the colonial local forces, for training purposes, and the " Reserve " officers would thus have an opportunity of keeping up their work. South Africa, Australia, and New Zealand, form natural over-sea bases for India, and men and material would be forthcoming, even if the command of the sea, in Home waters, were temporarily lost, early in a war.

A natural link, of mutual advantage, would be established between India and these colonies. Young men, of good education and with a little ready money, would always be welcomed there.

The colonies might offer some special terms to attract these " Reserve " officers, if the scheme were submitted to their governments.

8. *Cost per officer, to the Indian Government :—*

Without entering into minor details, this would be roughly as follows, for an officer commissioned at the age of 20 years.

Outfit allowance	...	...	£40
Passage to India	}	...	£80
„ India to Colony			
Pay, during first year, £20 × 12	}	...	£800
„ during 2nd and 3rd years, £23½ × 24			
Bonus, on completing 3 years' service		...	£300
I.—Reserve pay, till 32 years of age.			
£100	}	...	£325
£50			
£25 × 7			
II.—Reserve pay, till 36 years of age.			
£25 × 4	...	...	£100
			£1,645

Cheap at the price, considering that his services are available for altogether 16 years, and that no pension is involved.

9. Taking the age of 21 as an average on first commission, at the proposed rate (50) per annum, neglecting casualties, the following establishment would be complete in 15 years.

Qualified Reserve Subalterns.

I.—Reserve (ages 24—32).

Cavalry	160
Infantry	240

II.—Reserve (ages 32—36).

Cavalry	80
Infantry	120

600

10. An idea prevails that colonial governments are unwilling that their eligible men should be regarded as a possible reserve, to be drawn on for military purposes, by the government of another part of the Empire. They prefer to keep them for their own local forces. This prejudice has been borne in mind.

It is proposed to draw nearly half the candidates from the Home militia, and eventually (at the age of 36) the whole lot became available for service with the colonial local forces. Their training would not have cost the colonial governments anything, and it is hoped that this obvious advantage to the colonies would outweigh the prejudice above mentioned.

11. The scheme specially provides for "Subaltern" officers only. Their training will only admit of their qualifications being equal to this rank. The scheme, therefore, avoids recommending any automatic promotion, by length of service in the Reserve. Such "Reserve" Captains or Majors would be difficult to "place" in units,

over the heads of regular officers, of greater experience and better training.

12. In a few special cases, officers might be transferred permanently to the Indian Army by exchange. The officer exchanging would take the place in the Reserve. Such exchange, probably, would have to be liberally paid for.

13. Colonial British officers, now serving in the Indian Army, who have been brought into contact with the fighting classes of native soldiers, have, undoubtedly, discarded any previous colonial prejudice against "coloured" men. Experience of down country natives (especially the ordinary population), only tends to confirm in the colonial mind, the prejudice against "Indians."

For this reason, colonial candidates must necessarily be attached to native regiments composed of the best classes only. This is an important point, as it is essential to remove from the minds of colonial "Reserve Subalterns," the rooted prejudice against "natives."

When this has been effected, the "Reserve" officers, settled in the colonies, will help to educate colonial opinion, to a more just appreciation of the worth and quality of the "Indian," as represented by the Sikh, Gurkha, Punjabi, Rajput, etc.

14. The scheme might be given a trial on a small scale, to test its feasibility.

Some such system as this, would appear to give better value for the money, than the present system of increasing the permanent establishment of British officers with native regiments.

In times of peace, 14 British officers per regiment scarcely seem necessary. The more British officers there are in peace time, the more native officers tend to be relegated to the background.

Whereas, on the outbreak of a big war, a large available reserve of officers, practically trained, as here suggested, would be of great value, to fill up the subaltern ranks, for the decisive stages of the war.

15. To find the money for the scheme, if not available from the increasing revenues of India, it would, possibly, be considered worth while, to reduce the present permanent establishment of British officers with native regiments. The money thus provided would suffice to provide a greater proportionate number of "Reserve Subalterns."

CONSIDERATION OF OBJECTIONS TO THE SCHEME.

- (i) "Reserves should not deplete existing sources but should tap fresh sources of supply."

This objection can hardly be applied to the colonial candidates. The militia candidates who would be tempted by the scheme, are rather those birds of passage, who would resign their commissions in the Home militia, after failing to get a commission in the Regular Forces, than those militia candidates, who intend to continue their connection with the constitutional Force.

- (ii) "Colonials" prejudice against "coloured" men, unfits them "for service in the Indian Army."

Actual experience has shewn that Colonials now serving with the best fighting classes have quite changed their opinion of natives.

- (iii) "The terms offered would scarcely compensate 'the loss of such an important period of life in unproductive' occupation."

Against this must be set :—

- (a) Three years' excellent experience, with no expense to the parents.
- (b) Bonus of £300 to start civil life with and the annual Reserve pay.
- (c) No trammels, as to Reserve Training, after the three years' service.

Young Colonials, of good family, usually follow their fathers in business, and an absence of three years, from 20 to 23, would not, therefore, interfere greatly with their chances in life.

- (iv) "The Home militia cannot be relied on for candidates."

This is a question of opinion. It is just as likely that this inducement would attract extra candidates for first commissions in the militia.

University candidates would be very suitable to fill up any vacancies not taken up by the militia.

Militia candidates have been preferred as having had already a preliminary military training.

PRECIS OF RUSSIAN MILITARY PAPERS.

BY CAPT. G. S. PALMER, 98TH INFANTRY.

Voyenni Sbornik.

In the December, January and February numbers there is an extremely interesting account of a ride from Manchuria to St. Petersburg, which was accomplished by a young officer of Artillery immediately after the conclusion of the Russo-Japanese War, accompanied only by his orderly.

The ride is noteworthy, not on account of the rapidity with which they travelled; on the contrary, the average distance traversed per diem was small, *viz.*, about 25 miles, including halts; but firstly, on account of the enormous distance of the whole ride, some 8,700 versts or nearly 6,000 miles; secondly, in view of the fact that it was carried out during the winter, through the depth of Siberia, where the temperature sometimes fell as low as 50 degrees below zero Fahrenheit; and, thirdly, because no preparations whatever were made beforehand for forage, etc., on the route to be followed and the horses had to eat whatever was to be obtained in, sometimes, almost uninhabited tracts of country.

The writer belonged to one of the East Siberian Artillery Brigade and at the end of the late war conceived the idea of testing the endurance of his horse (a thoroughbred English colt of the famous Orloff stud), as well as his own and his orderly's powers of withstanding hardships by this ride.

His orderly was mounted on a Siberian horse, from one of the large remount depôts of Central Siberia, and the writer says he never felt any doubt as to its capability of standing the test, as the true Siberian always thrives under such conditions.

Apart from the detailed description of the country traversed, which would occupy too much space, the chief interest of these articles centres in the questions of weight and equipment carried by the horses, quantity and quality of grain and fodder, shoeing and other details of horsemastership. The weights carried were not excessive; in fact, they seem remarkably small under the circumstances. The writer, who ordinarily rode about 11st. 7lbs., carried about 36 lbs. on his saddle, which was of the ordinary Russian officer's pattern, his orderly, who was rather heavier, about 54 lbs. Thus, the English horse carried, say, 14 stone, the Siberian 15 st. 7 lbs.

No details of equipment are given, which was presumably the ordinary artillery officer's, with the exception that they used snaffles and always carried the heavy horse-rug folded under the saddle. One complete set of spare shoes was carried and a couple of dozen spare nails. No food was taken, except perhaps a few pounds for the

mid-day feed as they always managed, by varying the length of their marches, to arrive somewhere for the night where they could get some kind of food for themselves and the animals. Most of the way they followed the so-called "Moscow Tract", the old main route across Siberia before the railway was constructed, and thus kept to a line of country more thickly settled than most parts of Siberia.

Their daily programme was as follows:—Rise at 4-30 or 5 A.M., groom, water and feed the horses; start at 7 A.M., ride 15 to 20 miles, halt at about 11-30 A.M., feed and rest till 1 P.M.; then push on till 5 P.M. or until they reached a hut or village where they could spend the night. On arrival, they invariably removed the saddles at once, rubbed the horses' legs down and their backs with hay or straw, gave them hay and plenty of soft bedding (if obtainable); then, 2 hours later, as much water as they wanted and then their corn which was usually oats. As regards quantity: at the start each horse was given 15 lbs. of oats a day and as much hay as he wanted. Later on as it grew colder, the quantity was gradually increased to 20 lbs. and eventually to 25 or 26 lbs. During the intense cold, which they experienced in Central Siberia, the writer states that almost all the time they were resting the horses munched hay to keep themselves warm. When grain was not obtainable, which happened more than once, they gave the horses rye bread and this had no evil effects.

The length of the day's march was gradually increased. At first they did only about 20 miles a day, as the horses had done no hard work for some time previously, and this was done mostly at a walk. As they became harder, this distance was gradually lengthened to 30 or 35 miles a day, of which about two-thirds was done at a walk and one-third at a trot. They halted about every 10 days for a clear day's rest, but were sometimes compelled to wait 2 or 3 days on account of the terrific winter storms, which made movement impossible. At Christmas and Easter they halted for about a week. One of the most remarkable points was the rapidity with which the English thoroughbred accustomed himself to the extreme climatic conditions. He grew a coat as thick and as long as the Siberian, and after that seemed to feel the cold no more than his companion. At night both horses had a thick rug each, but that was all. The only case of sickness during the whole of the journey was when the writer's horse had a slight attack of colic from eating bad grass, but it very soon passed off.

Both horses suffered very much, however, from cut and swollen fetlocks, the result of breaking through the crust of hard-frozen snow and the intense cold considerably increased the inflammation. As regards shoeing they used fairly light shoes (the weight is not given) which were, of course, "roughed" during the winter. They wore out very rapidly when the ground was frozen hard and had to be renewed at least once a fortnight.

Eventually they reached St. Petersburg at the beginning of May after being nearly 8 months on the way, both men and horses

thoroughly fit and well. The animals were bought by the Russian Artillery Remount Department which gave about £210 for the English horse.

As regards the country traversed, one point is worthy, perhaps, of notice—the extraordinary richness of central Siberia. The writer declares that poverty is unknown there and that the poorest peasants are better off than the richest in Russia proper. This, no doubt, partly explains why they had so little difficulty in getting grain and fodder and why the horses kept so fit, as well as the riders.

Under the heading “Tactical Exercises for Officers” there is a carefully prepared scheme of instruction in strategy and tactics, which the writer (an officer of the Russian General Staff) considers necessary for the higher training of officers of all ranks, from Lieutenant to Lieutenant-General. His scheme may be roughly summarised as follows:—

- (1) For Commanders of Army Corps and Division :
 - (a) Staff Rides,
 - (b) War Game,
 both dealing with strategic problems only.
- (2) For Brigade Commanders and Commanders of detached forces :
 - (a) Solution of Tactical Schemes on maps,
 - (b) War Game,
 - (c) Staff Rides (by Army Corps).
- (3) For Officers of the General Staff :
 - (a) Essays on various Military subjects,
 - (b) Criticisms of Campaigns, Reports, etc.,
 - (c) Solution of Tactical Problems on maps,
 - (d) Staff Rides.
 - (e) War Game.
- (4) For Regimental Officers :
 - (i) Commanders of Units and Field Officers—
 - (a) Tactical Schemes and Training in the methods of instructing their juniors.
 - (b) Analysis of recent manœuvres and criticism of orders issued.
 - (c) Staff Rides.
 - (ii) Junior Regimental Officers—
 - (a) Study of Military Books and History and criticism and discussion of their contents.
 - (b) Analysis of recent manœuvres.
 - (c) Solution of Tactical Problems on maps.
 - (d) “ ” ” ” on the ground, reconnoitring, writing reports, etc.,
 - (e) War Game, where possible.

This instruction to be carried out : (1) For Senior Commanders and officers of the General Staff, by the Head-Quarters Staff ; (2) for

Brigade and Unit Commanders, by the Staff of the Army Corps; (3) for all Regimental Officers, by the Regimental Staff, under the direction of the Brigade Commander.

This is the only way, the writer declares, of systematising any scheme of instruction in the higher branches of the Art of War.

The December number contains an interesting article on "*Infantry versus Cavalry*," in which the various conditions, under which collision between the two arms may occur, are fully discussed. The writer thus summarises; (1) infantry at rest, (*a*) in camp or bivouac, (*b*) partly in camp and partly in billets, (*c*) wholly in billets; (2) infantry on the march, (*a*) in open country, (*b*) in intersected or hilly country; (3) infantry in action, (*a*) in attack, (*b*) in defence.

Under each heading and sub-heading the writer describes his ideas of how infantry should meet the sudden onslaught of cavalry and finally gives as his conclusion, drawn from his experiences in the late war, that unshaken infantry has very little to fear from cavalry, provided that they do not try to close while the cavalry is charging, but limit themselves to fire. Even in camp or in billets, he says, the infantryman is quite safe if, instead of yielding to panic, he stays at the entrance of his tent or quarters and does not rush out in the open, as the cavalry will be so broken up by the obstacles they meet that they will be unable to act in mass and therefore nearly all their moral force will be lost. The only occasions, he says, on which the cavalry of either side gained any marked success against infantry in the late war, were when the infantry was hopelessly panic-stricken and demoralised. In conclusion and as one of the most important points, he insists on the great danger as well as the uselessness of infantry employing fire at night to repel a sudden attack by cavalry; it (the use of fire) only serves to intensify the panic, if any occurs, and no good results can be expected from its employment. Under such circumstances the bayonet is the best weapon, and cavalry, in the dark, will be sufficiently thrown into confusion by the obstacles they meet, such as tent-ropes, etc. As regards meeting an attack by cavalry when in action, the writer declares that, if the cavalry is in small force, infantry should rarely if ever, change its formation, but should simply be given the order "fire on the advancing cavalry." It should only close, in order to develop a more intense fire, when threatened by large forces of cavalry (such as a regiment or more), and this only when on the flanks of a widely extended line. In his opinion, cavalry will never, under modern conditions, make any serious attempt in force to break through the centre of a long line, but will only make the feint of doing so in order to make the infantry bunch up and so offer a good target for the opposing artillery.

The February number contains a detailed account of last year's Autumn Manœuvres of a German Army Corps, with the writer's

conclusions as to the present state of the German Army and its preparedness for war.

The first part of the article is devoted to a description of the troops taking part, giving their numbers, equipment, etc. During the manœuvres regiments of cavalry and infantry were made up, by means of reservists, to a strength of 750 sabres and 2,000 rifles respectively; the former consisted of 5 squadrons each, the latter of 3 battalions of 4 companies each. Each battalion of infantry had 8 cyclists and each battalion of chasseurs 8 dogs for carrying messages (the writer does not anywhere state whether these were found of any use). Machine guns (Maxims) were not attached to regiments or battalions, but manœuvred separately under the immediate orders of Brigade Commanders. Each machine gun section consisted of 3 officers, about 50 rank and file, 41 horses, 6 guns and 3 ammunition wagons. The supply of ammunition carried was 14,550 rounds per gun.

The artillery was armed as follows: field artillery with the old 1896 pattern field gun and the 1898 pattern field howitzer, calibre 4.2 inches; foot artillery with the 1902 pattern heavy howitzer, calibre 6 inches, throwing a shell of 96 lbs., with a range of 6,600 yards.

All the troops wore their ordinary cloth uniform and no experiments with khaki or any other protective colour were made, with one exception: the troops of one side, usually the "red," had a khaki cover for their helmets. The rank and file all carried their full field equipment, in the case of the infantry about 64 lbs. per man, which the writer considered much too heavy; the reservists in particular found it excessive. The weight of the cavalry equipment is not given. The equipment of the artillery was the same as that of the infantry, with the exception that they did not wear the knapsack and had a carbine instead of a rifle. The entrenching implements carried were: in each company, 100 small shovels, 10 picks and 5 felling axes; in each squadron, 8 small shovels, and 8 felling-axes; in each battery, 33 heavy shovels, 26 picks, 6 files and 26 felling-axes.

The manœuvres lasted from the 1st to the 20th September and were of a progressive nature. First, by brigades, then by divisions, and only for the last two days of the period did the Army Corps act as a whole, against a division detailed for the purpose from another corps.

Especial attention was paid to signalling but the only system used was, apparently, the semaphore with small flags. Each company and battery had 3 signallers; cavalry seem to have had none and to have relied entirely on mounted orderlies to keep up communication with other units.

In conclusion the writer gives the results of his observations which he summarises as follows:—

(1) Everywhere the offensive was the chief aim; a purely passive defence was invariably avoided.

(2) Very great extensions were used.

(3) There was a marked absence of any normal formation or plan of attack.

(4) In both attack and defence the centre was usually held by comparatively small numbers ; the reserves being almost invariably massed in rear of the flanks.

(5) Written orders were seldom issued ; as a rule they were communicated either verbally or by telephone. The writer remarks that the reason of so many disasters in the Russo-Japanese War was that orders were invariably written out and despatched to the various units by hand, with the result that they were nearly always received too late.

(6) In the attack the troops never advanced by twos and threes ; nothing less than a section was ever sent forward at a time, the German idea being that men are far more likely to get out of hand if they are allowed to creep forward two or three at a time and that the losses incurred will be no more severe if the section is always kept together.

(7) The troops invariably halted and lay down on the signal "cease fire" and thus gave the umpires a better chance of judging the state of affairs at the close of the day's work.

(8) The Supply and Transport services took part in the manœuvres just as much as they would have to do in actual warfare and thereby gained valuable experience.

Finally, the writer states that he considers that the Germans are better trained by far than the Russian troops and that the latter have much to learn from them ; that they are remarkably energetic and keen on their work. The only adverse criticism he has to make is that they have not sufficiently studied the lessons of the late war as regards the absolute necessity of entrenching both in the attack and the defence ; throughout the course of the manœuvres there was a marked absence of the use of cover, both artificial and natural.

PRECIS OF FOREIGN MILITARY PAPERS.

French Papers.

BY CAPTAIN W. L. J. CAREY, R.A.

Revue Militaire Suisse, August 1906.

The August number gives an interesting account of the Geneva Convention of 1906, which was the outcome of the 1889 Conference at the Hague. The original convention dates from 1864 and it was considered time to bring its provisions up to date to agree with modern practice.

The main object of the new conference was to render the terms of the convention more precise, clear, and complete and to eliminate certain provisions which are now admitted to be impracticable. With this idea the Swiss Government had prepared a lengthy and elaborate statement, containing a species of history of the Geneva Convention and the various issues which have arisen therefrom during the forty odd years it has been in force. Furthermore there were a series of definite questions and proposals to be put before the Conference, comprising all the chief points to be decided. Among these may be noted the following:—

Should disposal of the dead be preceded by minute examination of the body?

Sick and wounded should be considered as subject to the laws of war, and if they fall into the enemy's hands should be treated as prisoners of war.

The medical and ambulance services should continue their work, if the field is occupied by the enemy, under the orders of the enemy's military authorities.

Medical services, etc., cease to benefit by neutrality if they commit any act of hostility.

The old rule laid down that field hospitals, etc., remain neutral only so long as there are sick and wounded. Should they not be neutral in all circumstances?

Thirty-seven States were represented, for the most part by important delegations, e.g., 6 for Russia, 4 for France, etc. Turkey, Bolivia and Venezuela failed to appear. In any case, compared with the 17 States of the original convention, this assemblage shows a considerable development in the ideas of humanity. The members of the Conference included many distinguished men, such as Mr. Revoil, the French Ambassador at Berne, Doctor Uriel, the head of the Austrian Medical Staff, Doctor Hubbenet, Chief Surgeon at Port Arthur, etc. Four Committees were constituted, each charged with a definite share of the work. The whole affair lasted rather less

than a month. The date on which the convention was signed, the 6th of July 1906, is now historic.

The various Powers showed an unwonted harmony in the discussion, the sole exception being the arbitration clause, which was adopted in the form of a resolution by the majority, but from which Great Britain, Japan and Corea dissented.

The chief new principles which have been embodied in the convention are the following:—

1. Protection measures to be taken against marauders on the battlefield.
2. More minute examination of *identity* of the dead.
3. Conditional assimilation of Volunteer assistance with official medical personnel.
4. Medical services which fall into the enemy's hands to fly no flag but the Red Cross.
5. A unique distinctive sign of neutrality to be maintained. This to be the Red Cross on a white ground (the Swiss national arms with colours reversed) in recognition of the part played by Switzerland in assisting the cause of humanity.
6. Legal measures to be taken against the abuse of the Red Cross emblem whether in peace or war. In peace the symbol has been frequently misapplied to purposes of advertisement.

The signature of this second convention marks a step in advance for the progress of civilisation and the world.

Revue Militaire Suisse, September and October 1906.

The September and October numbers contain articles by Lieutenant-Colonel of Infantry, Feyler, dealing with the "General Principles for the Instruction of Infantry" and taken chiefly from the new German regulations as compared with the old German 1888, the new French 1904 and the Swiss 1890 regulations:—

I. Although infantry is the principal arm it usually acts in common accord with other arms.

This is now formally laid down. For infantry, which has the means of acting alone, it is insufficient merely to note that attention must be paid to the other arms. A definite ruling is necessary, so the new German regulations say: "The infantry is the principal arm. Its fire co-operates with that of the artillery to put the enemy out of action, but it overcomes the last obstacles alone." The French book says: "The infantry finally turns the enemy out of its position." Also it refers to "the unity of doctrine necessary to ensure connection between the arms." The Swiss book merely mentions that infantry acts with other arms.

II. Soldiers and their officers must be thinking beings, capable of independent volition and always animated by the will to conquer.

There was nothing like this in the old German regulations. The "iron discipline" remains, but with it is an appeal to the intelligence.

The French book is not so clear on this point. The appeal to the intelligence in instruction is rather implied than formally prescribed. But though precision of movement and frequent repetition is required it is not intended that initiative should be forgotten, for in one place the following passage occurs, "Multiplicity of orders engenders hesitation.....This should be avoided as far as possible by reliance on the intelligence and initiative of subordinates."

The Swiss regulations appear not to consider the point of importance except for officers, and then do not lay down definite rules.

III. The new German regulations distinguish clearly between drills and exercises which are a technical preparation for war, and those which are intended only to strengthen discipline. "Only the simplest things answer the purposes of war. Therefore simple formations should be employed.....Along with these, parade movements will be learnt, which require the greatest precision as being of a high disciplinary value." The old rigidity (*straftheit*) in war exercises has gone. The new rules allow the soldier great freedom of movement, he is not restricted to any particular position of the body or of the rifle. On the other hand he is expected to be able to utilise cover, and to show initiative.

The main principle underlying these rules is that a man must learn the movements of his unit until he can feel at home in any formation, but he is not rigidly restricted in the manner of his movements. On the contrary he should be prepared to allow for any irregularity or accident of ground, and to act on his own initiative when necessary.

IV. There are no drill formations for bodies larger than a company; after the company war formations consist merely of combinations of companies. There are no battalion movements. This last is indeed a radical departure from the old regulations.

But to make up for this it is laid down that companies must be exercised in all sorts of ground; therefore the new regulations try to abolish the distinction between the parade ground and the field.

V. The formations should be simple, and few in number. The test of training is that the troops should be able to do what war conditions require, and that once in the field they should not need to unlearn anything. Then are parade movements required? The new rules say, yes, for their disciplinary value, and therefore the drill *quâ* drill has not been curtailed.

The French regulations follow on the same general lines. But although the distinction between preparation for war and drill for disciplinary purposes is maintained, the French innate love of accuracy and precision has led to the formulation of rules for each rank, in great detail. For instance it is laid down that the Commanding Officer should give lectures from time to time to the Non-Commissioned Officers.

Again in the French regulations the old distinction between the parade ground as a place for drill, and the field as a location for manœuvres remains unchanged. In another respect there is a wide variation from the new German procedure. The French training

does not stop with the company. Battalion movements and exercises appear as heretofore.

In Lieutenant-Colonel Feyler's opinion the German regulations are better suited to war requirements than the French. The former give every latitude in formations, to allow for the ground or other circumstances. The latter lay down hard-and-fast rules, so that instead of adapting the formation to the ground, the object is rather to find a locality suitable for the formation. No great perspicacity is required to see which system will best stand the test of war.

VI. The new German regulations lay down that drills and exercises are not to be repeated *ad nauseam*; that the programme is to be varied so as to keep the men's attention on their work; that drills are to be held in various natures of country; and that parades are always to be at war strength—this last point is brought to the notice of the Swiss Confederation, which is proposing to carry out manœuvres with reduced numbers. Further, in practising the attack, the numbers who come up to the firing line are to be limited, as they would be in war. Orders must be given in a firm voice, but without unnecessary noise—a very sound proviso and a considerable improvement on the old rules, which actually encouraged noise.

VII.—Every superior is responsible for the instruction of his subordinates, but should not be restricted to any great extent in his choice of methods. Interference with a subordinate commander is only permissible in case of failure or delay. It is now an axiom that the development of the initiative corresponds directly to the responsibility borne. But if every man in the chain is to be allotted responsibility and given liberty within wide limits by his superiors, much more should the regulations, which are the superior of all, give liberty in like fashion.

The French regulations, however, which lay down, for instance, that the Commanding Officer is to arrange every Saturday for the following week's work, contravene this principle entirely. And this in spite of the expressed intention to introduce more independence and more breadth of view into the instruction. In one place liberty of choice of methods is referred to, and on the next page a definite order appears forbidding any modification of the *regulations which lay down the methods* to be employed. This is the more remarkable in that otherwise the French regulations formulate, with the greatest clearness, the necessity for initiative in subordinate commanders, far more so in fact than the German.

Lieutenant-Colonel Feyler then proceeds to discuss the proposed new Swiss regulations. Briefly, the conclusion is that the introduction to these new regulations should lay down the three main principles outlined in the German and French books. First, preparation for war as the sole end and aim of instruction. Second, development of the initiative. Third, certainty and assuredness of movement in taking up battle formations. The task of deducing their consequences from these principles lies with the text of the book itself.

The Congress of Medicine at Lisbon in April occupies much space in the September number. Although Great Britain does not appear to have been represented the collective opinions of the numerous distinguished medical authorities present invest this Conference with considerable importance.

THE LISBON MEDICAL CONGRESS—(APRIL 1906).

Military Section.

The three main issues before the Military Section of the Congress were :—

1. The organisation of medical services at the front.
2. Surgery in the field.
3. Military medical education.

I.

The duties of the medical services at the front were laid down as follows :—

1. To apply an absorbent aseptic dressing to all wounds.
2. To take action in cases of serious hæmorrhage and urgency.
3. To place the wounded in a condition to be moved, or at least to diminish the risks of transport.
4. To clear the field as quickly as possible.

To carry out these duties the usual rule is to divide the medical services into :—

- 1st line (echelon) Regimental service.
- 2nd " " Ambulance "
- 3rd " " Field Hospitals.

In Portugal there are only two :—

1. Regimental service.
2. Blood Hospitals (*Hôpitaux de sang*) (the traditional Portugese term).

1. Regimental services.—These have the care of the wounded during the battle. The regimental medical staff establishes small stations to which wounded men are brought. These are called dressing stations, *place de pansement de troupes*, *Hilfsplatz*, etc.

The points on which differences of opinion arise are the distance from the enemy at which the stations should be established, and the number of stations per unit. The distances proposed vary from 800 to 4,000 metres. Or again other authorities hold that nothing should be laid down definitely, but that dressing stations should be established wherever the wounded collect together under cover.

In regard to the number, the extent of the modern formations and the depth of the dangerous zones are against the normal figure of one per regiment. According to one authority 50 per cent of the projectiles fall at ranges between 800 and 1,000 metres. But another 25 per cent fall between 2,000 and 3,000 metres. So that unless suitable cover is available dressing stations are impracticable within the latter range.

On the other hand sentiments of humanity, the moral support which the soldier requires and the military spirit of the doctors following on the examples of Larrey, Percy and others, who gave succour to the wounded "where they lay" all render early assistance to fallen men a necessity.

Taking all things into consideration, many authorities hold that at least during the heavier phases of the firing dressing stations are not practicable. Small parties should go to the collections of wounded or *nids de blessés* and attend to them where they are, most often using their own field dressing. If, however, the ground is favourable, or there is a lull in the firing, the ordinary regimental station can be established. The choice of a locality and the selection of the particular form of station to be employed falls to the medical authorities. Staff officers are fully engaged elsewhere. But if these dressing stations are employed, it must be only in the action itself. Once the ambulances are able to work there is no need for the regimental dressing station. To retain the two, means waste of time and labour, and unnecessary handling. Indeed very often the best plan even during the action is to take the wounded direct to the 2nd line (echelon)—ambulance service—without the intervention of the dressing station.

Another point is the means of transport for the wounded. In some armies stretchers carried by the men of the regiment are used. But this is always slow, and the men are seldom available in an action, so it is proposed to employ light four-wheeled horsed vehicles.

2nd line (echelon) or ambulance service.—This consists of units of the medical service with a certain staff, medical stores and transport. These units establish the main dressing stations. The stations are located in villages or other suitable surroundings, the chief requirements being cover from artillery fire, proximity to the line of rail, sufficiency of water, etc. These stations are connected to the regimental dressing stations by a continual stream of vehicles (either hired or belonging to the main station) carrying wounded.

The number of the personnel constituting the 2nd echelon may be arrived at roughly, by calculations which have been found to approximate very fairly well to actual war results in Manchuria. Thus a division of 14,000 men loses 25 per cent or say 3,500. Of these 20 per cent are killed or say 700, leaving 2,800 wounded. Of these 50 per cent or 1,400 can walk, and will be dressed at the regimental station. Remaining 1,400 wounded to be carried in ambulances and attended to. This gives at least 1,400 dressings, without counting operations. At the usual rate, 4 dressings an hour, this means 350 hours' work. This with the Italian strength of personnel means the dressing station is at work for $3\frac{1}{2}$ days. With the Swiss figures the time is some 15 hours. In any case it must mean that the 2nd line medical services of a division halt for at least a day. But the division to which the 2nd line ambulances belong must march, and it cannot do without its medical staff. To provide for

this, the usual procedure is that wounded who cannot be dealt with are sent on to the 3rd echelon or field hospital.

But it is pointed out that:—

1. The medical personnel who rejoin their division are worn out with work.
2. The despatch of some hundreds of wounded with their documents takes a long time and involves a serious waste of labour.
3. Dressings are opened and re-applied to no good purpose merely for want of exact knowledge of a case.
4. Wounded who are hit in the splanchnic cavities only suffer further risk.

The solution proposed is that the 2nd and 3rd echelons or ambulance services and field hospitals should be interchangeable. Then the 2nd line ambulance would remain where it was, and become a field hospital, while the corresponding field hospital would come up and join the division which the ambulance had left. To this end both units must be small and mobile.

3rd line (echelon) or field hospital.—The chief point here is the question whether the field hospital, as is usually at present the case, should be a large distinct unit or whether as above proposed it should be interchangeable with the ambulance unit.

The latter arrangement is considered preferable. It is interesting to note that the conclusion as to the medical men themselves was that they should become military officers and not merely officials. This has apparently been done in Italy, Japan and Switzerland.

II.

SURGERY IN THE FIELD.

The necessity for attending to wounded men in battle is generally acknowledged, not only from motives of humanity, but also in recognition of economic considerations. Every man is worth at least the cost of his food till the age of 20, or some 40,000 francs, and therefore a wise administration will do its best to avoid the waste of this capital. In spite of the introduction of small calibre arms (which may indeed have been partially due to considerations of humanity as opined by one of the distinguished officers present, or as pointed out by the author of the article rather to technical and ballistic necessities) the losses in war continue to be very heavy (from 18 to 20 per cent).

The main point is that a wound, if not fatal to begin with, does not usually become so unless infected. And to prevent this the only remedy is some form of antiseptic or aseptic dressing, the latter for choice. Much has been said on the question as to the duties of the regimental dressing stations, but it all comes to this, that the most that can be done for the wounded man in action is to bandage him, probably with his own "field dressing," to put him

into a condition to be carried to the 2nd line services or ambulance post, and to take him there.

III.

MILITARY MEDICAL EDUCATION.

The chief points appear to be that the military medical officer must be trained as a soldier in addition to his training as a physician; he must also have a special training in the diseases of soldiers, which are different from those of civilians. He must be an expert in sanitary science and hygiene. In his dealings with the soldier a mixture of tact and firmness is required which is not an universal quality. At the same time self-confidence, initiative and independence are indispensable to the military physician. While in war, courage, devotion to duty, self-abnegation, discipline and bodily fitness for any fatigue or privation are no less necessary. The ideal of the military medical officer may be said to lie in the Duc d' Orleans remark, "These are our doctors, they are soldiers and scholars at the same time."

FOOD SUPPLY OF THE FRENCH ARMY IN WAR TIME.

In a campaign there is a constant stream of materials of all kinds to the front to supply wastage, and at the same time a similar stream of wounded, sick, damaged stores, etc., to the base. The means of transport employed are as far as possible the same in both cases; if circumstances permit a railway is used and termed the "line of communications." At the extremities of this line there are the "assembling station" and the "head of the line of communication." Between these are the "storing station" where supplies are concentrated, and the "regulating station" in which the committee in charge of the transport of supplies holds its meetings.

The general principles to be observed in the service of supply are :—

The freedom of operation of troops is never to be impeded.

Troops and teams should be spared as much as possible.

Rations carried with columns and those in store depôts should be husbanded as much as possible.

The number of vehicles allotted for supply purposes should be reduced to a minimum.

Endeavours should be made to live on the country as far as possible, saving the rations carried by the men and the reserves which march with the troops.

During the period of active operations the supply service has two distinct functions to perform :—

1. Distribution to the troops.

2. Renewal of supplies to trains and convoys.

Rations are usually distributed every evening, for that evening and the whole of the next day. Anything not consumed before marching is taken with the man.

Fresh meat (killed the evening before, or the same morning, according to circumstances) is carried in special vehicles, which march immediately in rear of the troops with the fighting train.

These food supplies for daily consumption are termed the "daily ration."

Distribution is carried out by the "regimental trains" as far as is feasible. Supplies not carried by regimental trains are brought on the spot, *e.g.*, fuel, hay, fresh meat. If the country does not supply sufficient fresh meat the supply herds are drawn on. These are then renewed from the main park of animals.

Regimental trains, whether supplied from local sources, from the railway or from the "administrative convoy" must always be complete. The section which has carried out the distribution of rations must be refilled at once, preferably the same evening. Although the regulations provide for provisions being furnished by the inhabitants, this cannot be depended upon except for small parties.

These being the general principles the details are as follows:—

The supply service is carried out by the orders of the chief commander and under the direction of the administrative intendants officials, through the medium of the executive intendants officials, the supply officers and the military train.

An army corps has at its disposal the following:—

The "regimental trains," the "administrative convoy" for the transport of provisions and material, a field bakery for making bread, meat wagons, supply herds and an animal park for the supply of fresh meat. Also there are the troops detailed to exploit local resources.

During the concentration provisions are arranged for as follows:—

1. Rations, supplied by the military administration at the mobilisation stations, for the whole journey, 375 grammes bread, 125 grammes preserved meat, and 5 grammes salt for each twelve hours or less.
2. Meals provided by the mess at one per 24 hours. These consist of cold meat, cheese, etc., purchased for the whole journey before starting.
3. Hot coffee distributed at halts for meals at 25 centilitres per man per 12 hours.

In addition at these halts the men may refill their water bottles with brandy and water.

Thanks to this arrangement troops should arrive at the concentration base with the full allowance of provisions. If there is a deficit it is made up by the "debarkation rations" which are also carried by the men, and are intended to make up for deficiencies at the base. They consist of two days' bread and minor rations and one day's forage for horses.

The war rations which are either carried by the troops or follow them are :—

Two days' emergency rations (*vivres du sac*) consisting of "campaign" bread, dried vegetables, salt, sugar, coffee, preserved meat, condensed soup—one day's brandy and one day's reserve forage. These may only be used under the orders of the general commanding in chief.

Two days' regimental rations (*vivres regimentaires*), i.e., ordinary bread, dried vegetables, salt, sugar, coffee, bacon, preserved meat, condensed soup and forage. These are carried in the regimental trains, together with one day's brandy and are intended for distribution daily.

Two days' meat in the supply herds (*troupeaux de ravitaillement*). The fresh killed meat is carried in special vehicles, immediately in rear of the troops with the fighting trains.

In addition the administrative convoy carries four days' rations, from which the regimental trains are supplied, and two days' flour for bread to be made in the field bakery.

Let us now observe the working of this service :—

Every evening on arrival at a halting place, the fresh meat from the wagons is distributed for that evening's soup, and the next morning's breakfast (cold meal).

The empty vehicles proceed to the slaughtering place to be refilled. The supply herds are there; they are renewed next day by fresh animals from the rear, or by local purchase.

The regimental trains bring in the other rations for the next day, and then go to the advanced supply dépôt to refill.

At this point (the dépôt) the ration supply train is formed up. This consists of a dozen vehicles (three bread wagons, two wagons of minor rations, three wagons of animals, three wagons of forage and one passenger wagon). In this latter travel the personnel of the lines of communication, which accompanies the train from the regulating station. This consists of one officer from the lines of communication (military commissary), one administrative officer, a detachment of men of the supply services and a police post.

The loading up begins on the commissary's order.

The carts are brought up in front of the wagons, the end of each cart opposite the door of the wagon. The distribution is then made rapidly and without interruption, in the presence of the supply officers. Weighments are if possible avoided, all quantities being in round numbers, such as sacks of forage, etc.

When the loading is complete, the newly filled section of the regimental train joins the full section at the appointed spot.

When completed the regimental trains are directed into camp under the care of the gendarmerie.

In this way the food supply should always be able to cope with the necessities of the troops, renewals being as it were automatic.

In case of an accident, such as a block on the line or a battle, the eight days' rations carried on or with the troops allow

the time required and thus the chief commander is given a free hand.

At the same time it should always be remembered that occasions may and very probably will arise when in spite of every precaution supplies will fail. In view of this the "*Instruction pratique*" tells the French soldier that he must be prepared to face privations without murmuring.

(*Revue Militaire Suisse*, November 1906.)

The November number contains little that is suitable for reproduction, a long article from hitherto unpublished papers by Jomini on the battle of Jena, a description of the military medical sections of the Milan Exhibition of 1906—continued from the October number—and an article on some fortress manœuvres at Langess, form the main subject-matter. Of the letters from correspondents one or two items have been extracted.

An interesting detail of the recent Austrian manœuvres was the use made of wireless telegraphy. A distinct step in advance has been made in this branch. The balloons and kites hitherto employed to carry the antennæ were always a source of trouble, if not of danger. A wind might interfere considerably with the work. The fact that a balloon had to be reinflated every few days was a great drawback, and movements with an inflated balloon were attended with much inconvenience. Then the necessity for manufacturing hydrogen entailed the carrying of a large quantity of stores, and consequently a considerable number of vehicles. All this is now avoided by the use of a 45 metre pole or mast which can be taken to pieces and loaded on a wagon. This mast carries a sort of umbrella of wires, which form the antennæ. It can be rigged in two or three hours, and dismantled and loaded up in from 20 to 45 minutes. The whole apparatus, etc., which forms a "station" is carried on three vehicles. The farthest distance between "stations" in these manœuvres was 112 kilometres. Two stations moved about with the umpire staff. As soon as the commanding officer took up a position which he seemed likely to occupy for some time, the mast was rigged. If he moved to a small distance, communication was maintained by telephone. Generally speaking these manœuvres are said to have proved that field telegraphy is one of the things most to be depended on in case of mobilisation, and one of the least likely to prove illusory.

A couple of months ago a committee of senior officers was assembled by the Belgian Minister of War to report on the following points:—

1. As a consequence of the rearmament of the field artillery, what is the most suitable organisation for that arm?
2. Would it not be possible to separate field artillery completely from fortress artillery?

3. Would it not be preferable to amalgamate fortress artillery with engineers, the idea being to insure uniformity of principle in defensive fortification?

The committee has reported against the amalgamation of fortress artillery and engineers. The idea was that the best man to build a fort is the man who has to defend it, and *vice versa*. But it was urged that the functions of the two services are essentially distinct, the one pertaining to guns and their stores, and the other being concerned with fortifications and works. On the other hand it might be argued that in building works it is necessary to have regard to their defence by artillery, and so on.

As to the separation of field from fortress artillery; that is almost certain to take place. The two arms, although both employed with guns, are obviously distinct, the qualities required are very different, and it may quite reasonably be argued that there is more difference between a field and fortress artillery man than between a cavalry and infantry soldier. One has to work in the field and must be a horseman, the other acts on the defensive in forts, and his work is more sedentary than that of a supply official.

(*Revue Militaire Suisse*, December 1906.)

I. A criticism of some Swiss manœuvres in 1906 by the French General Langlois.

The General's article is rather lengthy, but the pith of it lies in the general observations. His opinions and remarks are briefly as follows:—

In these manœuvres the troops engaged acted as portions of a larger imaginary force, in fact they formed a skeleton army. This is an excellent arrangement, for the reason that it compels attention to the tactics of the situation, and eliminates strategy. The main object of all peace manœuvres is to teach the commanders of both large and small units how to handle troops in action, *i.e.*, to give the said commanders instruction in tactics, not in strategy. The latter can and should be studied indoors on maps.

The manœuvres were organised on these principles to represent a battle, for the whole five days they lasted. This plan was generally successful in attaining the end desired, but on at least two separate occasions the troops failed to grasp the underlying idea. In one case the manœuvring division was intended to represent a portion of a large army, awaiting attack in a fortified position. The commander, however, in direct contravention of this theory proceeded to make a forward movement on the offensive. In the other instance an elaborate turning movement was carried out quite regardless of the fact that the turned flank was supposed to be adequately protected by other (imaginary) troops.

Such mistakes as these, the General considers, might be avoided without any great difficulty. Either the umpires could call the attention of commanding officers to the main idea of the manœuvres

or small parties with flags could be used to represent the imaginary troops. The umpiring arrangements were on a new system. The umpires were distributed among the contending forces, and attached to individual units. This arrangement appeared to the General to have many drawbacks. An umpire would only know the orders issued on the side to which he was attached and could not be sufficiently instructed in the general situation. In fact his knowledge would not infrequently be limited to his own particular unit, and could not extend to neighbouring troops. The usual French system of a chief umpire for the whole manoeuvres, with subordinate assistants, is preferable in many ways. The chief umpire and his staff form a sort of centre, to which all subordinate umpires naturally gather, and from which orders and information emanate.

A very noteworthy detail is, that in accordance with Swiss custom, the director of manoeuvres this year was the officer commanding the army corps which is to carry out the grand manoeuvres next year. With him he had his own officers as staff. This arrangement ensures continuity of ideas and procedure, and the experience of one year is turned to the best advantage in the next.

The French General was very favourably impressed with the officers, and their powers of control and initiative. He gives it as his opinion that with an extremely limited period of service such as obtains in Switzerland, it is possible to make excellent subaltern officers, but it is not possible to train good N.-C. Os'.

REORGANISATION OF THE UMPIRE SERVICE.

(It is worthy of note that the opinions expressed in this article are by no means in accord with those of General Langlois as set forth in the preceding pages.)

This year's manoeuvres as noted above marked a new departure in the organisation of the umpire service. The main defects it was proposed to remedy were—

(a) Paucity of numbers.

This difficulty is in great measure due to the enormous length of the modern front, for it is impossible for one individual to act over more than a relatively small extent of ground. Consequently in many cases the lack of an umpire at a given point has resulted in the prolongation of an impossible or ridiculous situation.

(b) Umpires did not keep in close touch with the troops.

In camps or halting places the umpire's quarters were frequently at a distance from the troops. The result was that in case of a night attack or surprise the umpire often failed to be present.

(c) The duties of an umpire were imperfectly understood, both by the umpires themselves and by the troops.

The umpires were often insufficiently instructed in their somewhat delicate mission. On the other hand the troops were not always prepared to accept an unpalatable decision in the proper spirit.

This year a new arrangement was made, with the object of remedying these evils. The numbers of officers employed in umpires' duties were largely increased. Individual umpires were allotted to particular units, with the result that the necessary close contact with the troops was always maintained. The instruction given to umpires was more careful, and better devised. Lastly, the troops had a clearer understanding than heretofore of the object to be attained through the medium of the umpires.

The general result of the new procedure was good. It marks an obvious improvement. But the following remarks and suggestions are offered as the outcome of this year's experience in manoeuvres.

The system of allotting a separate umpire to each regiment answers admirably with cavalry and infantry. The umpire is always at hand when his presence is necessary, whether on the march or in camp, and he sees everything that goes on in the unit to which he is attached. These conditions do not, however, hold good for artillery. In camp this unit is invariably quiescent, and protected by other troops. On the march the occasions when there is no escort are few. The umpire attached to the escorting unit can therefore usually watch the particular batteries with which the escort marches and camps. On the rare occasions that the artillery marches alone, it is for the umpire to decide whether he should follow the guns, or stay with his unit.

After an action all umpires should leave the troops, and rendezvous at some central spot under the senior umpire of the division. The advantages of this arrangement are:—

1. Umpires, can make short verbal reports of the day's work. Every one is therefore informed of what has taken place.

2. The written reports are collected, edited and despatched to the chief umpire without delay.

3. The divisional senior umpire can at once issue instructions for the further operations. An extract from divisional orders should be furnished to the senior umpire.

4. The senior umpire distributes the umpires for the next day. He will not necessarily send them all out. It is useful to have a reserve of umpires who may be despatched to an important point. Again, the numbers of umpires to be attached to troops will vary with the importance of the latter's duties.

Everything possible should be done to facilitate the umpires' work. Orderlies should be provided, and careful arrangements made for the baggage, etc.

The chief duty of an umpire lies in estimating the effect of the enemy's fire for both sides, and in endeavouring to prevent impossible situations. The new rules on the subject direct that umpires should not interfere with tactical dispositions made by the commanders, which is very sound. But they also say that faulty formations, failure to take advantage of cover, etc., should be corrected by the umpire. This appears to be wrong in principle. It has the effect of turning the umpire into an executive officer, and burdens him with far too heavy a responsibility.

A strong point is the provision that when several umpires meet on the same ground, they report on the situation, and the senior gives a decision. Such a decision has naturally greater weight than that of a single officer.

Umpires must act with decision, calm, and tact; they must be careful not to be prejudiced in favour of the troops to which they are attached; and they must above all exact complete and instant obedience to their orders.

To conclude, it appears that the new arrangement is a great step in advance. It remains to decide between three systems—allotting all the umpires to units; allotting them in a body to each side; or a compromise between the two.

As in many other matters the happy mean seems to be the preferable course, *i.e.*, a compromise between the first and second systems, umpires to be allotted singly to infantry and cavalry units; the remainder being grouped for a whole decision.

(*Revue Militaire Suisse. January 1907.*)

HEAVY ORDNANCE.

The latest of the numerous experiments in Switzerland with heavy field guns have been with a 12 *cm.* howitzer and a 12 *cm.* gun, both from the Krupp factories. The chief dimensions, etc., are given as follows:—

12 *cm.* FIELD HOWITZER.

The lower carriage is of steel, with a trail and seats for two gunners. It carries the cradle; at the rear end of the latter are the bearings for the trunnions of the outer case of the hydraulic recoil cylinder. The trunnions are mounted right to the rear, near the breech of the gun. The elevating gear is placed in front of the trunnions. To increase the elevation the chase is raised, instead of the breech being depressed.

After firing, the gun recoils over the cylinder, passing between the cheeks of the carriage at high angles of elevation. A spring brings it back to the firing position. Breech-closing arrangement, prismatic wedge with lever; panoramic sight.

Ammunition.—Five charges of white powder and therefore separate ammunition.

		<i>Gun.</i>	
Calibre	...	... <i>mm.</i>	120
Length	...	... "	1675 or 14 calibres
Weight	...	... <i>kg.</i>	483
		<i>Carriage.</i>	
Weight	...	... <i>kg.</i>	790
Weight of gun and carriage			
in action	...	... <i>kg.</i>	1273

Ammunition.

Weight of projectile ...	kg.	21	
" " bursting charge	kg.	0·21	(shrapnel)
" " " "	"	2·10	(common)
No. of bullets in shrapnel ...		650	
Weight of cartridge and case	kg.	1·460	
" " charges ...	gr.	200, 230,	
		280, 360, 480	

Ballistics.

Muzzle velocity for 200 gr. charge	...	m.	157
" " " 480 " "	...	"	300
Energy of projectile	...	tm.	96·3
Extreme range {	time fuse	...	m. 6700
	percussion fuse	...	6795

12 cm. SIEGE GUN.

This gun is more powerful than the present Swiss 12 cm. fortress gun, and yet more easily handled, and requires no platform.

The carriage has a long trail. The gun can be shifted to travelling trunnion-holes for marching, but in difficult ground is transferred to a special vehicle. This latter is arranged so that the gun can be mounted direct into its own carriage, without any apparatus.

Panoramic sight, wedge with lever and quick-firing lock.

Gun.

Calibre ...	...	mm.	120	
Length ...	...	"	3600	or 30 calibres
Weight ...	...	kg.	2073	

Carriage and Limber.

Weight of carriage	...	kg.	1860	
Weight of gun and carriage				
in action	...	kg.	3933	
" of limber	...	kg.	465	(full)
" of gun limbered up	...	kg.	4398	

Ammunition.

Weight of projectiles	...	kg.	21	
" of bursting charge	...	kg.	0·21	(shrapnel)
			1·05	(common)
No. of bullets in shrapnel	...		500	
Weight of cartridge	...	kg.	5·5	

Ballistics.

Muzzle velocity...	...	m.	660	
Energy of projectile	...	tm.	467	
Maximum range	{	m.	10000	(percussion fuze)
	{	"	9500	(time fuze)
Remaining velocity at	...		4000	metres ...m. 325
" " "	...		8000	" ... " 250

CAVALRY MATTERS.

Much attention has lately been paid to reducing the weight carried by the cavalry horse. It is believed that the results have been more successful in the Swiss than in most other armies.

The saddle has been lightened by $4\frac{1}{2}$ kilos. The seat is smaller than before, but more comfortable. The wallets have been set more forward, clear of the rider's knee. Every ounce of superfluous leather has been suppressed. Steel has replaced iron everywhere. The arch of the saddle has been lightened. The number of straps required for attaching the cloaks, etc., is reduced to a minimum.

The uniform also has been modified. The cloak has been considerably altered. It is much lighter, more comfortable to wear, and protects the man, mounted or dismounted, better than the old pattern. It is also easily rolled up for the saddle, and as easily opened. The old cloak was so difficult to roll that men preferred a severe wetting to the trouble of rolling a cloak again. As the men can be trusted to wear the new cloak in bad weather, it is considered that the second pair of breeches need not be carried. The present heavy cloak is, however, retained for winter wear.

The képi has given rise to much discussion. It is badly balanced, and insecure on the head. When it falls off, its weight and the weakness of the material of which it is made usually result in its suffering appreciable damage. Many experiments were made, and eventually it was decided to adopt a felt helmet with nickel crest.

The tight tunic has given place to a loose blouse, under which warm garments can be worn. For "walking out" purposes the cavalryman's epaulettes, by which he sets great store, are fixed on to the blouse. For foot-gear, the boot has been retained. Gaiters were tried, but it was argued that they take longer to put on than boots; if loose, they slip; if tight, they are no more comfortable than a good boot; the buckles and straps need frequent repairs; and moreover they injure the leather of the saddle. So for the present at least the boot is retained.

The weights are given as follows:—

		Weight in grammes.		
		Old. system.	New. system.	Difference.
Saddle complete	...	18·500	14·000	4·500
Cloak	...	3·000	1·600	1·400
2nd pair of breeches	...	1·150	<i>Nil.</i>	1·150
Bread bag	...	·600	·200	·400
Forage	...	5·000	4·500	·500
Lightening the head-dress and tunic.	...	...	...	·450
		Total	...	8·400

That is, the total reduction in weight is some $8\frac{1}{2}$ kilogrammes.

THE IMPERIAL MANŒUVRES IN AUSTRIA.

General idea.—A hostile army coming from the north penetrates into Galicia. The opposing troops coming from the south assemble in Lower Hungary.

Troops.—On the north, the I Army Corps, on the extreme right wing of the supposed army. On the south, the II Corps in Silesia and Moravia.

On the evening of the 29th August General v. Horsetzky commanding the I Corps had the following troops:—

7th Cavalry Division at Skotschan, 5th Infantry Division and 46th Landwehr Division west of Bielitz, 2 regiments of corps artillery (1 of howitzers), 1 battalion of pioneers, 3 bridging detachments, 1 of telephonists and 1 of balloonists. Total 31 battalions, 28 squadrons, 108 guns, 4 machine guns and 1 battalion of pioneers. In addition, in reserve, some 30 *km.* to the rear, the 17th Infantry Division (17 battalions, 2 squadrons and 24 guns).

The II Corps under General Fiedler consisted of 13th Landwehr Division, 2 regiments of Artillery (1 of howitzers), the 3rd Cavalry Division, detachments of telephonists and balloonists. Total 12 battalions, 26 squadrons, 60 guns, 4 machine guns, 1 armoured automobile and 1 battalion of pioneers. In addition, some 40 *km.* to the rear round Troppan was the 4th Division, and the 25th Division was some 50 *km.* from Frieditz on the other side of the Carpathians.

The country between the centres of concentration was very hilly and cut up. The field of manœuvres was separated into many sections, chiefly by affluents of the Vistula; but the character of these sections was generally the same, wide extents of ground with frequent marshy depressions, separated by steep hills. Movements of artillery and cavalry were very difficult.

The task of the I Corps is to repulse the enemy reported to be in Silesia and Moravia.

The II Corps receives orders to march on the Teschen-Bielitz line to meet and throw back the enemy. The greatest difficulty of the O. C. II Corps lay in the way his troops were dispersed about the country. As the opposing infantry were only 65 kilometres apart, two days' march sufficed for the I Corps to reach Teschen, and to attack the enemy before he had completed his concentration. General Fiedler decided, however, to carry out the concentration at Teschen, that being a centre for the roads and railways. Thus the left division had 50 *km.* to march, the centre division 30 and the right division 60.

The first day of the manœuvres, the 31st August, the two divisions of the I Corps advanced towards Teschen.

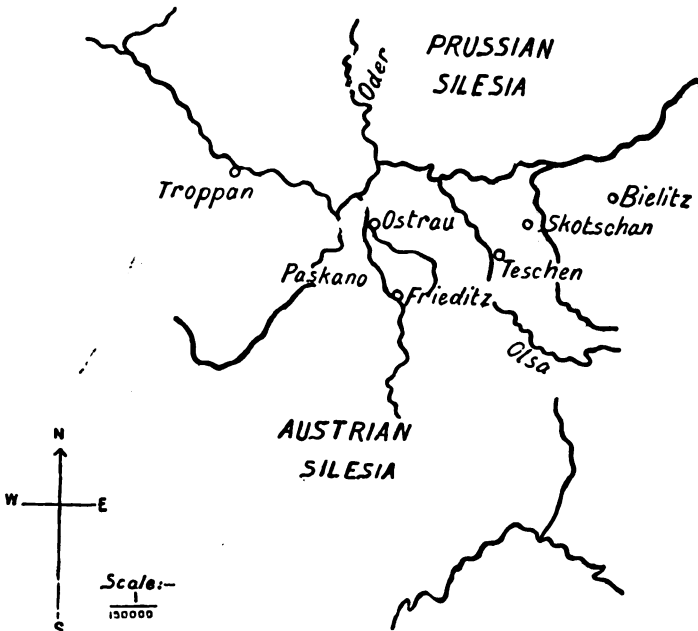
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These movements were carried out without incident. It was very hot and progress was slow. The cavalry, however, had a fight. The northerners were pushed back, but the exhaustion of the horses and the bad ground prevented effective pursuit.

The infantry were delayed in their march by artillery and dismounted cavalry fire. It appeared on this and other occasions during the manœuvres that the cavalry were beginning to realise their power with their excellent carbine. It was, however, perhaps carried too far. Regular attacking movements were often made, necessitating leaving the horses in a way which is quite inadmissible.

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Sketch Map of country in Austrian Imperial manœuvres

Until late in the morning the I Corps was unaware of the 5th Division's march against Petrow. It was only towards 10 A.M. that the cavalry having failed to discover any hostile troops near Mahren Ostrau, the order was given to incline southwards, while the rest of the troops continued on the Teschen—Frieditz line. At this last point the 13th (Landwehr) Division had gained a success which was decisive. A chapter of accidents had brought about the defeat of the 5th Division to the general astonishment of all present.

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General Fiedler was equal to the occasion. Roughly, his idea was to let the enemy come up to the 25th Division, at Izingclau, and then turn his right flank. The main incident of the day was a vigorous attempt of the I Corps to force a passage through the enemy's line. General v. Horsetzky boldly tried to do this between the 25th and 13th (Landwehr) Divisions. This dashing plan appeared at first to have a good chance of success, but in half an hour General Fiedler had brought his artillery into action, and put the whole of his reserves into a counter-attack. To the north also the II Corps had the best of it.

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The motor wagons have made a distinct step in advance. But above all the wheeled kitchens were a remarkable success. The troops who tried them were given so great an advantage that there is no doubt they will be generally adopted.

(*Revue Militaire Suisse. February 1907.*)

THE EQUIPMENT OF THE SWISS INFANTRY.

(1)—*Weight carried by the foot-soldier.*

Under this head come food, ammunition, spare clothes, etc., the articles in which they are carried, and arms. The clothes in wear should not be included. The comparative weights are:—

					<i>Kg.</i>
Switzerland	...	...	...	...	10·5
Austria	...	...	...	...	10·3
Italy	...	...	...	...	9·7
France	...	...	...	...	8·0
Germany	...	...	...	...	7·6

The main difference between the first and last is that the German does not carry a spare pair of trousers, and his cape and haversack are lighter than the Swiss patterns.

The figures for arms and ammunition are :—

		Rifle and bayonet.	Ammunition.	Total.
		<i>Kg.</i>	<i>Kg.</i>	<i>Kg.</i>
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Germany	4·7	3·8	8·5
Austria	4·3	4·1	8·3

120 rounds for all except Italy, whose figure is 162.

The figures for food are :—

		<i>Kg.</i>	
Germany	(about) ...	3·3	(3 reserve rations, and 1½ bread ration.)
France	(„) ...	3·2	(2 reserve rations, and 1 cold meal.)
Italy	(„) ...	3·1	(2 reserve rations, and 1 complete day's ration.)
Austria	(„) ...	2·3	(2 reserve rations, and 1 bread ration.)
Switzerland	(„) ...	2·1	(1 reserve ration, and 1 bread ration.)

The grand total of weight carried works out to :—

		<i>Kg.</i>		<i>Kg.</i>		<i>Kg.</i>
Italy	... ..	21·6	plus a tent	1·6	Total	23·2
Austria	... ..	20·9	„ „	1·3	„	22·2
Switzerland	... ..	...	...	...	„	21·8
Germany	... ..	19·4	„ „	1·6	„	21·0
France	... ..	...	...	...	„	19·9

These figures do not include the pioneers' tools, nor the tent which it is proposed to issue to the Swiss infantry. The latter would bring the Swiss figure to 23·7 *kg.* As to the Russians and Japanese the figures are said to be 23·6 and 22·9 *kg.* respectively for summer. In winter another 7 *kg.* must be allowed for.

The general result is that the Switzer is the lightest loaded man, but at the cost of 1 reserve ration and a tent. While the Italian has the heaviest burden, but he has 42 more rounds of ammunition than any one else.

All the experiments made in Switzerland have only succeeded in reducing the load to 20 *kg.* It then becomes a question whether a man staggering under a weight of 20 *kg.* can in fact support the fatigue of modern war. The answer is obviously in the negative. Therefore something more drastic than a reduction of a couple of pounds is absolutely necessary. But how is this to be brought about?

Suggestions for replacing the cape by some form of universal garment, which should act as cloak, blanket and tent are invariably

impracticable. Worn as a cape by day in rain, the garment becomes useless for a blanket by night, and so on.

But is it necessary that the soldier should always carry everything on his person, *e.g.*, his haversack? Certain articles he must admittedly always have at hand. These are his arms and ammunition. But what else?

The baggage may be late in coming up, therefore the man should have one day's food with him, and also sufficient clothing to pass the night in comfort.

Everything else may remain in the rear, *e.g.*, the second pair of trousers, linen, etc., etc. This brings the weight down by *kg.* 3.9. The next thing to do is to lighten the haversack (or ruck sack), and the rifle, and to replace the cape by a light jersey; the whole burden to be carried may thus be brought down to 16 *kg.*

The 3.9 *kg.* taken off the man must of course be transported in vehicles. One two-horse wagon per company will be sufficient.

(2)—*Provisions for Infantry.*

At present on leaving the mobilisation station the Swiss troops have five days' rations:—

- (a) Provisions for the day of departure, bread on the man, meat and vegetables in carts.
- (b) Next day's provisions.
- (c) Three reserve rations, one in the haversack one in the company wagon, and one in the battalion cart.

With so large a reserve to start on it would appear easy to keep the troops supplied. But in practice, more especially with large units, this is far from being the case. For an infantry Division the distance from the head of the column to the baggage is some 10 *km.* This means it takes the meat wagons two hours to come up in the evening. Even then the meat has to be cooked, and the company kitchens are not always with the meat vans. All things considered it is often four hours from the halt to the time the meal is ready.

The remedy lies in the use of wheeled kitchens, which are actually used by the Swiss mounted troop; and, if possible, the vehicle should carry a reserve ration in addition to the day's provisions which are being cooked *en route*. One kitchen per company would be necessary. The use of these kitchens has been attended with excellent results for the mounted troops, and the Russians in Manchuria spoke very highly of the advantages thereof.

The object to be attained is always to keep the original allowance intact by replacing expenditure every day. This can sometimes be done by buying cattle and slaughtering on the spot. This is preferable to depending on the supplies from the rear, but it would be as well to have a ration of smoked or preserved meat on the meat wagons. This would prevent unnecessary expenditure of the iron ration, which should be reserved for really great emergencies. For bread, supplies from the rear must be depended on.

(3)—*Infantry Trains*—(Baggage).

The present battalion baggage consists of 10 vehicles, *i.e.*, 2 ammunition and 5 baggage wagons and 3 requisition carts, all two-horse.

The 2 ammunition wagons carry 43 rounds per rifle. To begin with the numbers should be increased so as to bring the total—including the ammunition carried on the person—to 200 rounds per rifle. This will necessitate an increase to two wagons per company or 8 per battalion.

Then four of the baggage wagons carry the field kitchens, provisions, reserve rations, lanterns, coverings for bivouac, officer's baggage, etc., all indiscriminately mixed. To start with the wagons are overloaded, and cannot face even moderate gradients. Secondly, the mixing of loads has the result that whatever is required all the wagons must come up before the particular article can be found.

The first improvement is to institute a special vehicle per company for the field kitchens—this can afterwards be replaced by the wheeled kitchens.

Next, the coverings and the personal baggage taken off the soldier (as proposed above in this article), form a full load for another vehicle per company.

The fifth wagon is supposed to carry tools. But this is a special matter, and it is therefore considered that this vehicle should not form part of the battalion baggage at all.

Two of the requisitioned vehicles carry the baggage of the battalion staff, and the meat respectively. These should remain. The third is for the reserve rations. But this is actually a sufficient load for two vehicles, and two should be allowed.

The results of these changes are that, first, the vehicles are all properly loaded, and, second, that each vehicle only contains one class of stores, and therefore it is only necessary to send for the particular vehicle required.

The effect of these proposals is that the number of vehicles per battalion is raised from 10 to 17, but the advantages obtained are considerable. The weight on the soldier is lightened, the amount of ammunition is increased, and the vehicles are properly loaded.

These figures compare not unfavourably with those of other nations, *viz.*, Germany 46 vehicles, France 43, Italy 30, Austria 45 per regiment, the regiment consisting of 3 battalions, except in Austria which has 4.

All the powers are engaged in attempts to solve this important problem, the lightening of the foot-soldier's burden. In France the man has no haversack, but a small bag (*sacoche*) which contains his reserve provisions, cooking utensils and a shirt. His linen, change of shoes, brush, etc., form a package which is carried on a company baggage wagon. The weight on the soldier is decreased by 5 *kg*.

In Italy the bread-bag holds bread, if necessary a reserve biscuit ration, a ration of preserved meat, and 36 rounds of ammunition

All other personal effects are placed in the haversack, which is left behind when the soldier goes into action.

The Japanese had a similar system in Manchuria. But the articles left behind were brought up by any transport which could be obtained on the spot, and were therefore often late. In the Transvaal the English reduced the soldier's burden to 19.6 *kg.* by carrying haversacks, blankets, etc., in carts whenever possible.

(*Revue Militaire Suisse. March 1907.*)

The first article deals with the Swiss 1906 manœuvres of cavalry against infantry.

This species of training was first tried in 1905, with the result that it was decided to repeat the experiment. Accordingly in 1906 three cavalry brigades were pitted against one infantry brigade for three days' manœuvres. The Chief Director was an experienced officer Col. Wille, and the cavalry commander was the Chief Instructor for that arm, Col. Wildbolz. The appointment of such distinguished officers marked the importance attached to the manœuvres.

The general idea was that a cavalry division (white) had occupied a certain section of ground on the left bank of the Rhine, and two bridges. The orders were to cross the Rhine on the morning of the 24th September, explore towards Zurich and Linmat where the enemy was concentrating, and ensure its own army's debouching when it crossed the Rhine on the 25th.

The infantry (red)—One Brigade and 2 companies of Guides—had been sent forward towards Linmat. The duty was to cover the mobilisation of the army on the 24th and succeeding days between Zurich and Turgi.

The main advantages of this form of manœuvres are that on the one hand the cavalry learn to appreciate the strength and weakness of infantry tactics; and on the other the infantry obtains an opportunity of trying conclusions with an arm of which it knows little, and whose methods are very different to its own. Situations such as would certainly occur in actual war are not infrequent. Moreover for infantry to oppose an enemy who always avoids prolonged actions, and takes advantage of his mobility to make surprise attacks, feints, charges, flanking or reverse movements, must have a considerable disciplinary value. Troops on foot are soon exhausted in the struggle with the elusive mounted adversary, and are very apt to get out of hand, while fire control becomes difficult. Lastly, the occasions for the exercise of prompt initiative by subordinate commanders cannot fail to be numerous.

In this particular case the chief feature appears to have been the employment of shock tactics by the cavalry, which twice had recourse to the sabre. The plan followed was to fix the infantry on a particular line by machine-gun fire, then to force a deployment and to follow it by violent musketry fire, finishing off with simultaneous charges at different points. It is difficult in peace manœuvres to judge whether these attacks would have been successful in their object, but they are extremely interesting and instructive.

Another remarkable feature was a surprise of a white (cavalry) camp by a red party in the early morning, showing that the prevailing system of cavalry patrols is far from being a perfect means of protection.

Firing at Balloons.

Some interesting experiments took place in Switzerland last October, with the object of determining the best method of firing at balloons with field guns. A balloon was sent up to a height of 550 metres, and moored at some 4 kilometres from a battery. The car was replaced by a wooden box holding five dummies. After some 9 minutes' fire the balloon sank. It was found that the envelope had been repeatedly pierced, and two of the dummies were hit. It was considered that the results of the experiment were very satisfactory.

The great difficulty to be contended with in firing at a balloon is the complete absence of anything on which to range the guns. And yet it is of the utmost importance to obtain the range with accuracy. The system followed was first to fix the position of a point vertically below the balloon on a map. This was done by sending out two observers who drew lines from different points through the plane of the balloon, as projected on the map. The intersection of these lines fixed the position of the balloon. Then to observe the fire, parties were sent out on both sides. These reported whether the bursts were right or left of, or in line with, the balloon from their own view point. These reports, compared with the observations made from the battery gave the required information with sufficient accuracy. Direct fire is recommended, unless the balloon is hidden by cloud, in which case auxiliary aiming points should be used. Shrapnel is the only projectile, except in cases when the balloon is seen before the ascent. In the latter circumstances common shell are useful for finding the range.

The general conclusion apparently was that firing at balloons need not be looked upon as being beyond the sphere of practical politics.

THE GERMAN HEAVY FIELD ARTILLERY DRILL.

This drill book came out last June, and a short resumé of its contents may be of interest.

The chief piece of ordnance is the 15 *cm.* howitzer, known as the "Heavy field howitzer of 1902." There are also 10 *cm.* mortars and 10 *cm.* guns.

The organisation is in battalions of 4 batteries of 6 howitzers. For guns the numbers are the same, but for mortars 2 batteries of 4 mortars go to a battalion.

A howitzer battery consists of:—

- (a) Fighting battery of 6 guns, 6 wagons and an observation vehicle.
- (b) Ammunition échelon of 6 wagons, horses for officers and reserve.
- (c) Baggage. Forage, baggage car, other vehicles.

I.—GENERAL PRINCIPLES.

(a) *Control*.—The control rests with the commander of the heavy artillery. But if the foot artillery is acting with the heavy artillery the senior officer takes command, unless the chief commander of the troops exercises control himself.

During the march the artillery commander remains with the commander of the troops, and receives orders as to the heavy artillery from the latter.

(b) *Employment*.—The heavy artillery comes into action when required by the plan of operations. The object is to bring as many pieces into action as possible, bearing in mind the limitations of the ammunition supply. The heavy shell of these ordnance may be advantageously employed against covered targets. The batteries are enjoined to remember that though they can open fire at long ranges and should very often do so, yet if opportunity offer they should advance as near the enemy as possible. Fire should always be from covered positions. The choice of the first fire position depends on the chief commander's intentions. Firing over the heads of friendly troops will be the rule, and therefore special precautions are necessary. Protection for the batteries lies in the hands of the chief commander. But a very careful service of observation must always be maintained.

(c) Every battery in action should continue its fire without intermission, employing all possible means to that end, and calling upon neighbouring batteries for men and material if need be.

(d) Changes of position are to be deprecated, and should only take place with the concurrence of the chief commander.

II.—THE ATTACK.

(a) *Reconnaissance and choice of positions*.—The ideal heavy artillery position is one giving a maximum of fire effect with complete concealment from view. On this object the efforts of all reconnaissances should be concentrated. The main features of a position are a clear view over the flanks and approaches; a clear field of vision over the fighting area, and that of the movements of advanced friendly troops; the line to run perpendicular to the line of fire; soil not too soft; good communications in rear of the firing line; no salients or heights in or near the position, on which the enemy could range his guns.

(b) *Taking up a fire position*.—This can be done during the reconnaissance, care being taken that the movement is not observed.

(c) *Fire control*.—The chief commander lays down the duty to be performed by the artillery. The artillery commander then arranges the concerted action of field and heavy artillery to the best possible effect. Superiority of fire being the chief desideratum, the heavy ordnance must give their aid. The first object is to silence those portions of the hostile artillery which appear to be most important. Fire is then turned on any point considered advisable, more especially the enemy's supporting points.

THE IMPERIAL MANŒUVRES IN AUSTRIA.

General idea.—A hostile army coming from the north penetrates into Galicia. The opposing troops coming from the south assemble in Lower Hungary.

Troops.—On the north, the I Army Corps, on the extreme right wing of the supposed army. On the south, the II Corps in Silesia and Moravia.

On the evening of the 29th August General v. Horsetzky commanding the I Corps had the following troops:—

7th Cavalry Division at Skotschan, 5th Infantry Division and 46th Landwehr Division west of Brichtz, 2 regiments of corps artillery (1 of howitzers), 1 battalion of pioneers, 3 bridging detachments, 1 of telephonists and 1 of balloonists. Total 31 battalions, 28 squadrons, 108 guns, 4 machine guns and 1 battalion of pioneers. In addition, in reserve, some 30 *km.* to the rear, the 17th Infantry Division (17 battalions, 2 squadrons and 24 guns).

The II Corps under General Fiedler consisted of 13th Landwehr Division, 2 regiments of Artillery (1 of howitzers), the 3rd Cavalry Division, detachments of telephonists and balloonists. Total 12 battalions, 26 squadrons, 60 guns, 4 machine guns, 1 armoured automobile and 1 battalion of pioneers. In addition, some 40 *km.* to the rear round Troppan was the 4th Division, and the 25th Division was some 50 *km.* from Frieditz on the other side of the Carpathians.

The country between the centres of concentration was very hilly and cut up. The field of manœuvres was separated into many sections, chiefly by affluents of the Vistula, but the character of these sections was generally the same, wide extents of ground with frequent marshy depressions, separated by steep hills. Movements of artillery and cavalry were very difficult.

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The II Corps receives orders to march on the Teschen-Brichtz line to meet and throw back the enemy. The greatest difficulty of the O. C. II Corps lay in the way his troops were dispersed about the country. As the opposing infantry were only 65 kilometres apart, two days' march sufficed for the I Corps to reach Teschen, and to attack the enemy before he had completed his concentration. General Fiedler decided, however, to carry out the concentration at Teschen, that being a centre for the roads and railways. Thus the left division had 50 *km.* to march, the centre division 30 and the right division 60.

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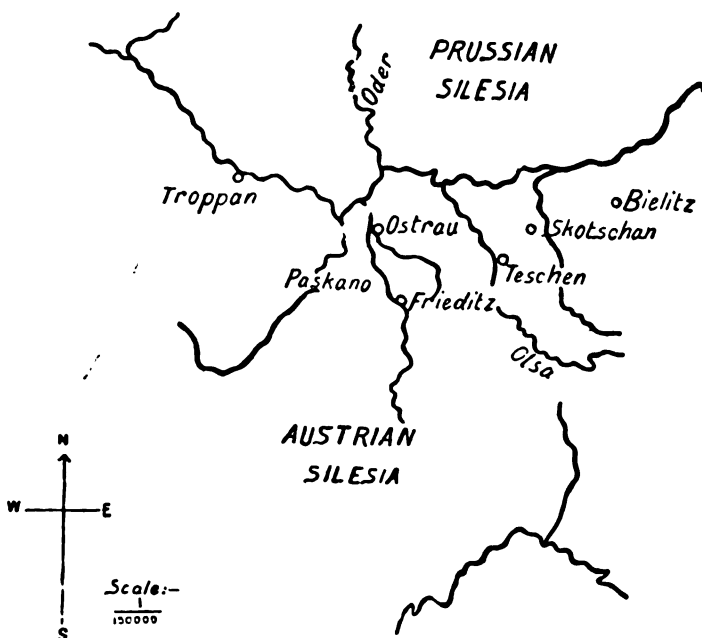
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120 rounds for all except Italy, whose figure is 162.

The figures for food are :—

	<i>Kg.</i>	
Germany (about) ...	3.3	(3 reserve rations, and 1½ bread ration.)
France (") ...	3.2	(2 reserve rations, and 1 cold meal.)
Italy (") ...	3.1	(2 reserve rations, and 1 complete day's ration.)
Austria (") ...	2.3	(2 reserve rations, and 1 bread ration.)
Switzerland (") ...	2.1	(1 reserve ration, and 1 bread ration.)

The grand total of weight carried works out to :—

	<i>Kg.</i>		<i>Kg.</i>	Total	<i>Kg.</i>
Italy	21.6	plus a tent	1.6		23.2
Austria	20.9	" "	1.3	"	22.2
Switzerland ...	...	" "	"	"	21.8
Germany	19.4	" "	1.6	"	21.0
France	"	" "	"	"	19.9

These figures do not include the pioneers' tools, nor the tent which it is proposed to issue to the Swiss infantry. The latter would bring the Swiss figure to 23.7 *kg.* As to the Russians and Japanese the figures are said to be 23.6 and 22.9 *kg.* respectively for summer. In winter another 7 *kg.* must be allowed for.

The general result is that the Swiss is the lightest loaded man, but at the cost of 1 reserve ration and a tent. While the Italian has the heaviest burden, but he has 42 more rounds of ammunition than any one else.

All the experiments made in Switzerland have only succeeded in reducing the load to 20 *kg.* It then becomes a question whether a man staggering under a weight of 20 *kg.* can in fact support the fatigue of modern war. The answer is obviously in the negative. Therefore something more drastic than a reduction of a couple of pounds is absolutely necessary. But how is this to be brought about?

Suggestions for replacing the cape by some form of universal garment, which should act as cloak, blanket and tent are invariably

impracticable. Worn as a cape by day in rain, the garment becomes useless for a blanket by night, and so on.

But is it necessary that the soldier should always carry everything on his person, *e.g.*, his haversack? Certain articles he must admittedly always have at hand. These are his arms and ammunition. But what else?

The baggage may be late in coming up, therefore the man should have one day's food with him, and also sufficient clothing to pass the night in comfort.

Everything else may remain in the rear, *e.g.*, the second pair of trousers, linen, etc., etc. This brings the weight down by *kg.* 3.9. The next thing to do is to lighten the haversack (or rucksack), and the rifle, and to replace the cape by a light jersey; the whole burden to be carried may thus be brought down to 16 *kg.*

The 3.9 *kg.* taken off the man must of course be transported in vehicles. One two-horse wagon per company will be sufficient.

(2)—*Provisions for Infantry.*

At present on leaving the mobilisation station the Swiss troops have five days' rations:—

- (a) Provisions for the day of departure, bread on the man, meat and vegetables in carts.
- (b) Next day's provisions.
- (c) Three reserve rations, one in the haversack one in the company wagon, and one in the battalion cart.

With so large a reserve to start on it would appear easy to keep the troops supplied. But in practice, more especially with large units, this is far from being the case. For an infantry Division the distance from the head of the column to the baggage is some 10 *km.* This means it takes the meat wagons two hours to come up in the evening. Even then the meat has to be cooked, and the company kitchens are not always with the meat vans. All things considered it is often four hours from the halt to the time the meal is ready.

The remedy lies in the use of wheeled kitchens, which are actually used by the Swiss mounted troop; and, if possible, the vehicle should carry a reserve ration in addition to the day's provisions which are being cooked *en route*. One kitchen per company would be necessary. The use of these kitchens has been attended with excellent results for the mounted troops, and the Russians in Manchuria spoke very highly of the advantages thereof.

The object to be attained is always to keep the original allowance intact by replacing expenditure every day. This can sometimes be done by buying cattle and slaughtering on the spot. This is preferable to depending on the supplies from the rear, but it would be as well to have a ration of smoked or preserved meat on the meat wagons. This would prevent unnecessary expenditure of the iron ration, which should be reserved for really great emergencies. For bread, supplies from the rear must be depended on.

(3)—*Infantry Trains*—(Baggage).

The present battalion baggage consists of 10 vehicles, i.e. 2 ammunition and 5 baggage wagons and 3 requisition carts, all two-horse.

The 2 ammunition wagons carry 43 rounds per rifle. To begin with the numbers should be increased so as to bring the total—including the ammunition carried on the person—to 200 rounds per rifle. This will necessitate an increase to two wagons per company or 8 per battalion.

Then four of the baggage wagons carry the field kitchens, provisions, reserve rations, lanterns, coverings for bivouacs, officers' baggage, etc., all indiscriminately mixed. To start with the wagons are overloaded, and cannot face even moderate gradients. Secondly, the mixing of loads has the result that whatever is required all the wagons must come up before the particular article can be found.

The first improvement is to institute a special vehicle per company for the field kitchens—this can afterwards be replaced by the wheeled kitchens.

Next, the coverings and the personal baggage taken off the soldier (as proposed above in this article), form a full load for another vehicle per company.

The fifth wagon is supposed to carry tools. But this is a special matter, and it is therefore considered that this vehicle should not form part of the battalion baggage at all.

Two of the requisitioned vehicles carry the baggage of the battalion staff, and the meat respectively. These should remain. The third is for the reserve rations. But this is actually a full load for two vehicles, and two should be allowed.

The results of these changes are, that first, the vehicles are all properly loaded, and, second, that each vehicle only contains one class of stores, and therefore it is only necessary to send for the particular vehicle required.

The effect of these proposals is that the number of vehicles per battalion is raised from 10 to 17, but the advantages obtained are considerable. The weight on the soldier is lightened, the amount of ammunition is increased, and the vehicles are properly loaded.

These figures compare not unfavourably with those of other nations, i.e., Germany 46 vehicles, France 43, Italy 50, Austria 45 per regiment, the regiment consisting of 3 battalions, except in Austria which has 4.

All the powers are engaged in attempts to solve this important problem, the lightening of the foot soldier's burden. In France the man has no haversack, but a small bag (*sac de*) which contains his reserve provisions, cooking utensils, and a shirt. His linen, change of shoes, brush, etc., form a package which is carried on a company baggage wagon. The weight on the soldier is decreased by 5 lb.

In Italy the bread bag holds bread if necessary a reserve of salt ration, a ration of preserved meat, and 50 rounds of ammunition.

All other personal effects are placed in the haversack, which is left behind when the soldier goes into action.

The Japanese had a similar system in Manchuria. But the articles left behind were brought up by any transport which could be obtained on the spot, and were therefore often late. In the Transvaal the English reduced the soldier's burden to 19·6 *kg.* by carrying haversacks, blankets, etc., in carts whenever possible.

(*Revue Militaire Suisse*. March 1907.)

The first article deals with the Swiss 1906 manœuvres of cavalry against infantry.

This species of training was first tried in 1905, with the result that it was decided to repeat the experiment. Accordingly in 1906 three cavalry brigades were pitted against one infantry brigade for three days' manœuvres. The Chief Director was an experienced officer Col. Wille, and the cavalry commander was the Chief Instructor for that arm, Col. Wildbolz. The appointment of such distinguished officers marked the importance attached to the manœuvres.

The general idea was that a cavalry division (white) had occupied a certain section of ground on the left bank of the Rhine, and two bridges. The orders were to cross the Rhine on the morning of the 24th September, explore towards Zurich and Limmat where the enemy was concentrating, and ensure its own army's debouching when it crossed the Rhine on the 25th.

The infantry (red)—One Brigade and 2 companies of Guides—had been sent forward towards Limmat. The duty was to cover the mobilisation of the army on the 24th and succeeding days between Zurich and Turgi.

The main advantages of this form of manœuvres are that on the one hand the cavalry learn to appreciate the strength and weakness of infantry tactics; and on the other the infantry obtains an opportunity of trying conclusions with an arm of which it knows little, and whose methods are very different to its own. Situations such as would certainly occur in actual war are not infrequent. Moreover for infantry to oppose an enemy who always avoids prolonged actions, and takes advantage of his mobility to make surprise attacks, feints, charges, flanking or reverse movements, must have a considerable disciplinary value. Troops on foot are soon exhausted in the struggle with the elusive mounted adversary, and are very apt to get out of hand, while fire control becomes difficult. Lastly, the occasions for the exercise of prompt initiative by subordinate commanders cannot fail to be numerous.

In this particular case the chief feature appears to have been the employment of shock tactics by the cavalry, which twice had recourse to the sabre. The plan followed was to fix the infantry on a particular line by machine-gun fire, then to force a deployment and to follow it by violent musketry fire, finishing off with simultaneous charges at different points. It is difficult in peace manœuvres to judge whether these attacks would have been successful in their object, but they are extremely interesting and instructive.

Another remarkable feature was a surprise of a white (cavalry) camp by a red party in the early morning, showing that the prevailing system of cavalry patrols is far from being a perfect means of protection.

Firing at Balloons.

Some interesting experiments took place in Switzerland last October, with the object of determining the best method of firing at balloons with field guns. A balloon was sent up to a height of 550 metres, and moored at some 4 kilometres from a battery. The car was replaced by a wooden box holding five dummies. After some 9 minutes' fire the balloon sank. It was found that the envelope had been repeatedly pierced, and two of the dummies were hit. It was considered that the results of the experiment were very satisfactory.

The great difficulty to be contended with in firing at a balloon is the complete absence of anything on which to range the guns. And yet it is of the utmost importance to obtain the range with accuracy. The system followed was first to fix the position of a point vertically below the balloon on a map. This was done by sending out two observers who drew lines from different points through the plane of the balloon, as projected on the map. The intersection of these lines fixed the position of the balloon. Then to observe the fire, parties were sent out on both sides. These reported whether the bursts were right or left of, or in line with, the balloon from their own view point. These reports, compared with the observations made from the battery gave the required information with sufficient accuracy. Direct fire is recommended, unless the balloon is hidden by cloud, in which case auxiliary aiming points should be used. Shrapnel is the only projectile, except in cases when the balloon is seen before the ascent. In the latter circumstances common shell are useful for finding the range.

The general conclusion apparently was that firing at balloons need not be looked upon as being beyond the sphere of practical politics.

THE GERMAN HEAVY FIELD ARTILLERY DRILL.

This drill book came out last June, and a short resumé of its contents may be of interest.

The chief piece of ordnance is the 15 *cm.* howitzer, known as the "Heavy field howitzer of 1902." There are also 10 *cm.* mortars and 10 *cm.* guns.

The organisation is in battalions of 4 batteries of 6 howitzers. For guns the numbers are the same, but for mortars 2 batteries of 4 mortars go to a battalion.

A howitzer battery consists of:—

- (a) Fighting battery of 6 guns, 6 wagons and an observation vehicle.
- (b) Ammunition échelon of 6 wagons, horses for officers and reserve.
- (c) Baggage. Forage, baggage car, other vehicles.

I.—GENERAL PRINCIPLES.

(a) *Control*.—The control rests with the commander of the heavy artillery. But if the foot artillery is acting with the heavy artillery the senior officer takes command, unless the chief commander of the troops exercises control himself.

During the march the artillery commander remains with the commander of the troops, and receives orders as to the heavy artillery from the latter.

(b) *Employment*.—The heavy artillery comes into action when required by the plan of operations. The object is to bring as many pieces into action as possible, bearing in mind the limitations of the ammunition supply. The heavy shell of these ordnance may be advantageously employed against covered targets. The batteries are enjoined to remember that though they can open fire at long ranges and should very often do so, yet if opportunity offer they should advance as near the enemy as possible. Fire should always be from covered positions. The choice of the first fire position depends on the chief commander's intentions. Firing over the heads of friendly troops will be the rule, and therefore special precautions are necessary. Protection for the batteries lies in the hands of the chief commander. But a very careful service of observation must always be maintained.

(c) Every battery in action should continue its fire without intermission, employing all possible means to that end, and calling upon neighbouring batteries for men and material if need be.

(d) Changes of position are to be deprecated, and should only take place with the concurrence of the chief commander.

II.—THE ATTACK.

(a) *Reconnaissance and choice of positions*.—The ideal heavy artillery position is one giving a maximum of fire effect with complete concealment from view. On this object the efforts of all reconnaissances should be concentrated. The main features of a position are a clear view over the flanks and approaches; a clear field of vision over the fighting area, and that of the movements of advanced friendly troops; the line to run perpendicular to the line of fire; soil not too soft; good communications in rear of the firing line; no salients or heights in or near the position, on which the enemy could range his guns.

(b) *Taking up a fire position*.—This can be done during the reconnaissance, care being taken that the movement is not observed.

(c) *Fire control*.—The chief commander lays down the duty to be performed by the artillery. The artillery commander then arranges the concerted action of field and heavy artillery to the best possible effect. Superiority of fire being the chief desideratum, the heavy ordnance must give their aid. The first object is to silence those portions of the hostile artillery which appear to be most important. Fire is then turned on any point considered advisable, more especially the enemy's supporting points.

Some heavy artillery officers should be attached to the attacking infantry. These would communicate to the guns where to direct their fire, *e.g.*, in rear of the enemy's firing line, etc.

In case of a failure in the infantry attack the heavy artillery fires on the pursuing enemy.

Surprise and unity of direction are desirable advantages in opening fire. Against narrow targets the rate of fire should be increased. Against wide target concentration by all batteries. Against covered targets, massed fire.

The commander of the heavy artillery allots their tasks to his battalions, sees that they are carried out, and provides for the ammunition supply.

The battalion commanders give the batteries their targets with the ranges, as shown on the map, and any detail which may be of use, informing them of reports and orders and the results of their own observations.

If the targets are invisible, sections are allotted to batteries. The batteries firing on the main line should be prepared to open fire at once. Several batteries should not range on the same target unless their fire can be observed separately.

In case of sudden change in the tactical situation the battalion commander obtains orders from his chief as to a change of the line of fire. In case of danger, however, the battery commander, who always has the immediate control, changes the line himself.

The rate of fire should be regulated by the necessities of the movement, and with due regard to the ammunition supply. The latter point must always be kept in view by artillery commanders of all grades, as of the utmost importance.

Ammunition supply.—This is, as already stated, a matter of the greatest importance. For those immediately in charge of the supply no orders should be necessary. To keep their batteries supplied is their sole duty.

In action as a rule the ammunition is taken out of the wagons and laid near the guns. The limbers and wagons should as a rule be 500 m. in rear of the guns as occasion offers; they may, however, remain with the battery or join the ammunition wagons (*échelon*). The situation most suitable is in rear of a flank of the battery.

The ammunition *échelons* follow the last battery of their battalion when marching to action. On the field of battle each *échelon* must follow its battalion, and on no account lose touch. The commanders of *échelons* (officers) are responsible that their battalion is never short of ammunition. Empty wagons must be immediately replaced by full ones.

The light ammunition columns are under the chief commander. They follow their battalion as a rule. In action they take position 800 m. in rear of the batteries, and replace the empty wagons sent back. The control of these columns is a vital matter; a mistake may put the batteries out of action. In action therefore the control may be handed over to the artillery commander.

These light columns replace expenditure from the main ammunition columns, a process which, if possible, should be carried out in the field.

The remainder of the article deals with the heavy artillery on the defensive and in the attack of fortified positions, but *mutatis mutandis* all the foregoing applies in both cases.

ITALIAN PAPERS.

BY. CAPT. W. L. J. CAREY, R.A.

[*Rivista di Artiglieria e Genio. Nov. 1906*].—(*contd. from Oct. No.*)
(**Second Lecture by Capt. Giannitrappani of the Italian Artillery.**)

THE OPERATIONS ROUND PORT ARTHUR IN THE YEAR 1904.

II.—*The development of the investment and siege of the fortress.*

Twelve years ago, in November 1894, during the war of Japan against China, there were 18,000 Japanese, under Marshal Oyama, before Port Arthur. General Noghi was there too as a subordinate commander. In the fortress there were some 12,000 Chinese. On the 20th November, Oyama gave the order for the assault, and the fortress fell into the hands of the Japanese with a loss of some 15 killed and 200 wounded.

Far otherwise were to be the operations round Port Arthur ten years later.

These operations may be divided into several periods, each with its own special characteristics. From the opening of hostilities to the end of May, the operations were confined to the fleet and the coast batteries. The land operations may be said to have begun at the end of May, when the Japanese victory at Nanshan cut the communications between the fortress and Kuropatkin's army.

The first period of land fighting lasted through June and July, and consisted of the Japanese conquest of the ground between Dalny and the fortress, and attacks on the stubbornly defended advanced Russian works, ending with the complete investment of the fortress. The second period (August) is characterised by desperate infantry assaults on the fortress, which were invariably repulsed by the determined Russian resistance. In the third (September and October) the idea of carrying the place by assault was abandoned, and a regular siege by sap was begun, together with general attacks, which ended in the capture of all the advanced works by the Japanese. Lastly, in the fourth and last period the besiegers began to mine, and to make direct attacks on the works of the ceinture, which only terminated with the surrender of the fortress.

Naval operations from February to April.—As is now common knowledge the war between Russia and Japan broke out unexpectedly on the night of the 8th February, without any previous declaration of hostilities. In place of such a declaration there was a bold and successful torpedo attack on the Russian fleet in the outer harbour of Port Arthur. This, together with the attack at Chemulpo

a few hours later, gave the Japanese an immediate and appreciable superiority at sea, and enabled them to throw Port Arthur into disorder.

In fact this night surprise threw Port Arthur into a panic. The land works were in many instances scarcely begun, and a large portion of the troops were cut off the fortress on the Korean side. So that had the Japanese ventured on a landing, Port Arthur would probably have fallen.

This, however, did not happen, and the next chapter consists of Japanese naval bombardments, and a war of submarine mines, the former of which was for the most part fruitless, but the latter cost both sides some of their best ships, the Russians losing the battleship *Petropavlosk*, with the famous Admiral Makaroff on board.

The Japanese in this phase employed indirect fire, carried out from the fleet to the west of the Laoshan promontory. A cruiser in the open, with a wireless telegraph apparatus, controlled the fire. But the results were poor, being rather of a moral than material character. The Russian coast batteries, which were all on high sites, compelled the Japanese ships to keep their distance, and afforded efficient protection to the Russian anchorage. These batteries, moreover, succeeded in inflicting some damage on the Japanese fleet, but did not themselves suffer at all, confirming the old theory that high sited batteries have nothing to fear from ships, even though the latter have the superiority in power.

Here too we may notice the numerous daring Japanese attempts to force the passage into Port Arthur, which cost them many lives and invariably failed of success.

Commencement of the land operations—Battle of Nanshan.—On the 1st May, after the victory of the 1st Japanese army at the Yalu, and the tactical blockade established by the fleet, the disembarkation began. The II Army Corps under General Oku comprised the troops. The railway was at once attacked, but a train with the Viceroy Alexieff broke through on the 6th, and another with a full load of ammunition—a fortunate chance for the defence,—on the 8th.

The Japanese advanced towards the isthmus of Kinshu, which was commanded by the Nanshan Hill, the real key of Port Arthur. The latter was intended to be crowned by a fort, but this had not been built, so that all General Stoessel could do was to strengthen the position with field works. The position was extremely strong both by nature and by art, when the Japanese attacked. Even the heroism displayed by the latter would not have availed to overcome the Russian resistance, but for the fact that some gunboats were able to enfilade the position, and eventually turned the scale in the Japanese favour.

The Russians retreated towards Port Arthur, while the Japanese army took possession of Talienwan and Dalny. This latter provided them with a splendid base for landing siege material and troops. On the 2nd of June, the advanced troops were only 25 kilometres from

Port Arthur, and found themselves facing the Russian defences across Kwantung.

The besieging troops under Noghi now disembarked at Dalny and in its vicinity, while Oku's army marched northwards to meet Kuropatkin's army of relief. This movement ended in the Japanese victory at Wafangu, but these operations are beyond the scope of the present article, as not being immediately connected with the siege.

The advance of the besiegers in June and July.—The Japanese took up a position right across Kwantung, with a view to covering Dalny and the railway, and facilitating the concentration of stores, etc. The Russians at the same time occupied a line of advanced posts at from 15 to 20 kilometres outside Port Arthur, and prepared for a determined stand. Their object was to give time for the improvements so sorely needed in the defences, and to endeavour to exhaust the enemy before he could reach his goal. The 4th Division was detailed for this duty, and occupied the line of trenches and field works on the heights. The left wing was specially strengthened and provided with searchlights. On the 26th of June, ten days after their defeat at Wafangu had deprived the Russians of all hope of succour, the Japanese advance commenced. The right wing remained at Antishan, the centre advanced on the Pandao heights, and the left attacked the Russians on the Lannikao-Shuantinshan line. The position was carried by night, the Russians retiring to Laotsoshan where they threw up trenches. The Japanese remained on their new line (from Antishan to Shuantinshan) for a month, which time was employed in bringing up stores and troops. Inside Port Arthur work was in active progress, while outside the Russian mobile troops entered on a series of vigorous counter-attacks.

On the 4th July, the whole 4th Division attacked the Japanese position, while the cruiser *Novik*, boldly running out of harbour, engaged the enemy's artillery, in support of the Russian field batteries. The Japanese fleet apparently did not interfere, and the Russians soon obtained the superiority in the artillery duel. But although the attack was of the most determined nature, and the fighting lasted two days, the Japanese, who brought up their reserves, and with them 3 batteries of heavy artillery, held their ground firmly and in the end the assault failed completely. The Russians retired to their positions, while the Japanese improved theirs by mounting 12 guns captured at Nanshan, and 6 naval guns.

Meanwhile the Russians prepared a new line of defence, from Tache Bay to Louisa Bay right across the Kwantung Peninsula, completely covering the fortress. The left rested on the heights between the Lung-wang-ho and Taho rivers, the centre consisted of the Wolf Hills, which rose at the end of the valley of the Lun-ko and commanded the fortress, and the left wing was formed on the Green Mountains. The whole line, strengthened by accessory defences and wire entanglements, etc., was to constitute the last outer defence of the fortress, but it was too extended for the troops which were to

hold it. The trenches and batteries, it is true, showed clearly on the sky-line, and offered an excellent target to the Japanese artillery. But the defences were under the protection of the guns of the fortress, and in close connection with, and within easy reach of help therefrom. Moreover, as long as the Russians held this line, the besiegers' guns were kept at over 6 kilometres from the fortress, and effective bombardment was impossible.

On the 26th July, the general Japanese advance began against the Russian 4th Division's positions, on the line between the Sishan and Tapishan hills. That day the Japanese only reached the foot of the heights, but they remained there that night. But on the 27th, 28th and 29th the Japanese pressed the defenders back till, on the 30th, they had seized the northern slopes of the important Wolf Mountains. The Russians were compelled to retire to the advanced works of the fortress itself, thus abandoning the whole of the outer defences. The Russians now occupied the works on the north front, *i.e.*, those on the heights of Sakushan and Takushan, Fort Kuropatkin, the Pagoda work, and the works on Long Hill, as far as Louisa Bay.

The Japanese established themselves on a line from the northern slopes on the hills south of Tushentsi to the heights east of Takushan. Port Arthur was effectively invested. The vigorous offensive had resulted in driving the enemy out of the country before the fortress.

Infantry assaults and artillery bombardment in August.—Sortie of the fleet.—On the 30th July, the investment was to all intents and purposes completed. The only means of communication with the outer world lay through the Colomba and Louisa Bays, where the blockade was not very stringent. Now the attack against the fortifications began. During August these consisted of extensive assaults against the semi-permanent and field works on the northern, and eastern fronts. At the same time there was a systematic bombardment of the city and the inner harbour (in which the fleet lay), and a careful organisation of the lines of investment.

It was not without considerable trouble that the Japanese finally installed themselves on the heights of the Wolf range. Large quantities of sand bags were brought up, and under the shelter of this temporary breastwork it was possible to carry out the excavation of gun-pits and trenches.

The siege park was established directly in rear of the Wolf Mountains, near the railway. The whole country between these mountains, the railway, and the sea became gradually transformed into a Japanese entrenched camp. Here were the headquarters, the camps of the reinforcements as they arrived, the artillery parks, supply services, etc. Wireless telegraphy kept General Noghi's headquarters in communication with Admiral Togo, who had a base in the Elliot Islands. The distance of the railway station, Tshanglintse, from Port Arthur was about 16 kilometres.

Guns were rapidly mounted behind the Wolf Mountains, and, on the 7th August, fire was opened on the northern face of the fortress, the city, and the fleet lying in the inner harbour (which was about 10 *km.* from the Japanese position). At the same time 12 and 15 *cm.* guns were placed behind the hills on the left bank of the Taho, to attack the advanced works of Takushan and Sakushan on the eastern face.

These batteries were invisible to the Russians, who entirely failed to locate them. On the 8th August, then, after a few hours' bombardment, the Japanese made their first assault, advancing as if they were in the field. But as the short artillery preparation had not been enough to damage the artillery of the defence, especially the light armament, and had done no harm to the infantry under cover, the Russians manned the parapets with machine and light Q.-F. guns as soon as the bombardment ceased, and decimated the Japanese columns. After repelling the Japanese, the Russians made a counter-attack, but without success. On the 9th, the Japanese returned to the charge with more determination than ever, and eventually captured the village of Takushan, and the works on the hill of that name, and on Sakushan, thus gaining ground on the right bank of the Taho, to within 1,000 to 1,500 metres of the forts on the Dragon Chain. From this important position the Japanese were enabled to bombard the inner harbour and city at a range of about 9 *km.*

In the following days General Noghi, who did not at first, apparently, pay much attention to the western face, set about extending his own right wing, so as to complete the investment. The 1st Division captured the hilly ground between the Louisa and Colomba Bays. On the 15th August, Port Arthur was completely cut off on the land side. The Japanese outposts ran from the north bank of the Colomba Bay across the Lun-ho, north of the Shushang village, past the foot of the Dragon Chain to the east, to reach the sea again through the depression between the Takushan and Sakushan hills.

In this fighting, which was often carried on at night by the use of searchlights, the Russian losses were very heavy, but could not have been so serious as those of the Japanese. The infantry of the latter were ordered to advance at all costs, and the artillery continued their fire until the infantry came into actual contact with the enemy so that sometimes their shells added to the losses.

This fact gave rise to the war correspondents' statements that Noghi ordered the artillery to fire on the ground in rear of the infantry, so that the latter had no option but to continue the advance.

The bombardment of the fleet from the siege guns behind the Wolf and Takushan Hills, which the Russian forts could not prevent, was one of the chief causes of the ill-fated sortie made by the ships on the 10th of August. On the 14th, the remains of what had been the Russian Pacific Squadron re-entered the harbour,

never to leave it again. The crews and most of the guns were eventually brought ashore, and used in the forts.

The defeat of the Russian fleet and the first successes round the fortress led General Noghi to imagine that he had shaken the defence considerably, and on the 17th he made the first offer to General Stoessel to surrender Port Arthur and the fleet, on condition that the garrison should go free. But this offer was indignantly refused.

Then began a series of general attacks, carried out simultaneously by the three divisions of the besieging army, the 1st, 9th and 11th, the 1st on the right wing between Louisa Bay and the Mandarin road, the 9th between the Mandarin road and the railway, and the 11th to the south, between the railway and the sea.

It was hoped to bring about the fall of the fortress immediately, the more so that the general situation—it was the eve of Liaoyang—demanded an early ending to the siege. But the condition of Port Arthur and its defenders was far other than the Japanese imagined.

Apparently the scheme of attack was to capture, with the 1st and 9th Divisions, the works commanding the valley of the Lun-ho (Kikuan and Erlung), those in the valley, and those on Long Hill and then to make a rush against the Antishan forts through the Lun-ho valley. The 11th Division was to make a demonstration against the central section.

On the 18th preparations for the attack were begun; trenches were dug; and on the 19th, a vigorous general artillery bombardment was started. On the 20th, the infantry assaults commenced and lasted uninterruptedly day and night (by the light of electric searchlights and star shell) till the 24th. But, thanks to the stubborn Russian defence, the wire entanglements, and the machine gun fire, these attacks failed everywhere, though the Japanese sometimes reached the line of the ceinture below Aquila's Nest. On the northern section, however, the Japanese 1st Division succeeded in taking 174 Metre Hill, Long Hill and two advanced works of the Panlungshan group. Thus this elaborate plan of attack may be considered a complete failure, and cost some 14,000 men. This, with former losses, brought the besiegers' total loss to about 20,000 men.

These battles showed clearly how vain were all hopes of forcing the fortifications of such a fortress as this by infantry assaults. So the Japanese perceived that they must curb their impatience, and despite the rocky ground, set to work by sap. This method, though slow, promised more sure and certain results. Accordingly they started in September.

Siege operations in September and October—General attacks, and fall of the advanced works on the north section.—The front of the attack was divided into three sections allotted to the three divisions: the left section (11th Division) corresponding to the eastern section of the fortress, the centre (9th Division) corresponding to the northern section, and the right (12th Division) corresponding to the

Guns were rapidly mounted behind the Wolf Mountains, and on the 7th August, fire was opened on the northern face of the fortress, the city, and the fleet lying in the inner harbour (which was about 10 *km.* from the Japanese position). At the same time 12 and 15 *cm.* guns were placed behind the hills on the left bank of the Taho, to attack the advanced works of Takushan and Sakushan on the eastern face.

These batteries were invisible to the Russians, who entirely failed to locate them. On the 8th August, then, after a few hours' bombardment, the Japanese made their first assault, advancing as if they were in the field. But as the short artillery preparation had not been enough to damage the artillery of the defence, especially the light armament, and had done no harm to the infantry under cover, the Russians manned the parapets with machine and light Q.F. guns as soon as the bombardment ceased and decimated the Japanese columns. After repelling the Japanese, the Russians made a counter-attack but, without success. On the 9th, the Japanese returned to the charge with more determination than ever, and eventually captured the village of Takushan and the works on the hill of that name, and on Sakushan thus gaining ground on the right bank of the Taho, to within 1000 to 1500 metres of the forts on the Dragon Chain. From this important position the Japanese were enabled to bombard the inner harbour and city at a range of about 9 *km.*

In the following days General Negha, who did not at first apparently pay much attention to the western face, set out extending his own right wing so as to complete the investment. The 1st Division captured the hilly ground between the Lena and Columbia Bays. On the 15th August Port Arthur was completely cut off on the land side. The Japanese outposts ran from the north bank of the Columbia Bay across the Lena to north of the Shushing village, past the foot of the Dragon Chain to the east to reach the sea again, through the depression between the Takushan and Sakushan hills.

In this fighting, which was often carried on at night by the use of searchlights, the Russian losses were very heavy, but could not have been so serious as those of the Japanese. The infantry of the latter were ordered to advance at all costs and the artillery continued their fire until the infantry came into actual contact with the enemy so that sometimes their shells added to the losses.

To strengthen his case to the war correspondents' statements that Negha ordered the artillery to fire on the ground in rear of the infantry so that the latter had no option but to continue the advance.

The Japanese were not the first to use the siege guns behind the Wolf and Takushan Hills, which the Russians in fact considered to be one of the chief weaknesses of the latter. It seems likely that the ships on the 10th of August. On the 14th, the monitors *Albatross* and *Helios* had been on the Russian Pacific Squadron re-entered the harbour.

never to leave it again. The crews and most of the guns were eventually brought ashore, and used in the forts.

The defeat of the Russian fleet and the first successes round the fortress led General Noghi to imagine that he had shaken the defence considerably, and on the 17th he made the first offer to General Stoessel to surrender Port Arthur and the fleet, on condition that the garrison should go free. But this offer was indignantly refused.

Then began a series of general attacks, carried out simultaneously by the three divisions of the besieging army, the 1st, 9th and 11th, the 1st on the right wing between Louisa Bay and the Mandarin road, the 9th between the Mandarin road and the railway, and the 11th to the south, between the railway and the sea.

It was hoped to bring about the fall of the fortress immediately, the more so that the general situation—it was the eve of Liaoyang—demanded an early ending to the siege. But the condition of Port Arthur and its defenders was far other than the Japanese imagined.

Apparently the scheme of attack was to capture, with the 1st and 9th Divisions, the works commanding the valley of the Lun-ho (Kikuan and Erlung), those in the valley, and those on Long Hill and then to make a rush against the Antishan forts through the Lun-ho valley. The 11th Division was to make a demonstration against the central section.

On the 18th preparations for the attack were begun; trenches were dug; and on the 19th, a vigorous general artillery bombardment was started. On the 20th, the infantry assaults commenced and lasted uninterruptedly day and night (by the light of electric searchlights and star shell) till the 24th. But, thanks to the stubborn Russian defence, the wire entanglements, and the machine gun fire, these attacks failed everywhere, though the Japanese sometimes reached the line of the ceinture below Aquila's Nest. On the northern section, however, the Japanese 1st Division succeeded in taking 174 Metre Hill, Long Hill and two advanced works of the Panlungshan group. Thus this elaborate plan of attack may be considered a complete failure, and cost some 14,000 men. This with former losses, brought the besiegers' total loss to about 20,000 men.

These battles showed clearly how vain were all hopes of forcing the fortifications of such a fortress as this by infantry assaults. So the Japanese perceived that they must curb their impatience, and despite the rocky ground, set to work by sap. This method, though slow, promised more sure and certain results. Accordingly they started in September.

Siege operations in September and October—General attacks, and fall of the advanced works on the north section.—The front of the attack was divided into three sections allotted to the three divisions: the left section (11th Division) corresponding to the eastern section of the fortress, the centre (9th Division) corresponding to the northern section, and the right (12th Division) corresponding to the

north-western advanced works. The two chief lines of attack were directed, one against the northern section (Kikuan and Erching forts) and the other against the north-western works (Rousan) and along these lines the trenches were constructed for the approach.

The advanced positions captured at the end of August were connected by deep trenches. The approach works were vigorously carried out by the pioneers, with infantry working parties and 8000 Chinese coolies, so that as the Japanese troops advanced they found themselves as well protected from fire as the Russians in their forts. Not a step was taken without digging trenches and making sand-bag shelters, and dead ground was cleverly utilised to bring the trenches up almost into contact with the Russian works. For miles the besiegers advanced by digging, sometimes in alluvial soil, sometimes among rocks and hard ground. The entangling made possible by the complicated system of forts rendered it necessary to keep the trenches almost parallel to the base and thereby prolonged the labour of the zigzag advance. Moreover, the extremely active nature of the defence gave the besiegers no rest. The Russian attacks were usually made by night, when they threw themselves on the working parties at sea head.

However, the hard and unintermitting work gradually dissipated the discouragement which their heavy losses had laid on the Japanese. Early in September some 16000 troops came up to replace casualties, and by the 19th the Commander-in-Chief considered that sufficient progress had been made to warrant another general attack.

This attack was mainly directed on two points, the extreme right wing acting against the advanced works on the north-west and the centre against Fort Kuropetkin. At the same time the division on the left made a demonstration against the eastern forts to distract the attention of the besieged from the north and west where the forces of attack were chiefly concentrated.

The importance of Fort Kuropetkin lay in its protecting the potable water-supply of the fortress. A brigade of the 9th Division was detailed for the assault, and was partly assembled in the trenches. The wire entanglements and electric connections to the mines had been to a certain extent destroyed by pioneers the night before.

On the morning of the 19th the bombardment of the forts by all siege and field guns began. This obliged the Russians to evacuate the works and take up positions near by, whence they were able to repel the Japanese assaults. Similarly, the next morning the Japanese could not occupy Fort Kuropetkin as it was raked by the Russian artillery fire. But they took up a position in the valley, so as to prevent the Russians re-occupying the fort and threatened them to cut off the water supply, an act which afterwards had serious consequences for the fortress.

At the same time the other troops of the 9th Division occupied the secondary works near the Strategy village and on the Pugda heights so that the Japanese might now be said to have

taken possession of the head of the Lun-ho valley, from where the wide opening leads into the fortress. As the Russians made incessant attempts every night to recapture the lost forts, the Japanese lost no time in placing them in a state to resist counter-attack.

On the right, as has been stated, the Japanese attack was directed against the Roiusan Hill, and that called by them Namako-yama (to the north of 203 Metre Hill). On these hills, the highest and therefore the most important of those immediately surrounding Port Arthur, were a group of improvised works.

The heights north of Roiusan had been taken by the Japanese in the sanguinary battles of the 19th to 24th August, and from them the trenches were started against Namako-yama. In these trenches one battalion was posted, and 14 more were kept in readiness for the attack.

On the 19th September a formidable bombardment of Namako-yama and 203 Metre Hill started the day. This drove the Russians out of the lower trenches, so that by evening these latter fell into the hands of the Japanese.

On the 20th the bombardment was kept up till 5 P.M. At that hour the Japanese surprised the enemy by a sudden rush, killed the men as they stood to the guns, and captured Namako-yama. From this position determined attempts were made to take 203 Metre Hill, but the troops were repulsed with fearful loss.

On the same day, the other brigade of the 1st Division attacked a hill called by the Japanese Hashimaki-yama, to the north of Namako-yama. Although twice repelled with heavy loss, including their commanding officer, this brigade succeeded in taking the Russian trenches in the rear and rushed the position, killing the defenders to a man. Counter-attacks failed to shake the Japanese, and they established themselves firmly on the hill.

Thus the net result of this second assault was that the Japanese obtained a firm footing on the heights, north-west of the fortress, from which the 203 Metre Hill could be attacked and reached the foot of the chief line of forts on the northern section. The losses, however, are estimated at 10,000 men, which appears to show that the besiegers' artillery was not yet strong enough to prepare the way for the infantry.

After this attack came a period of comparative quiet, which lasted 25 days. This time was utilised in making roads, bringing up material, constructing trenches (at night), repairing the railway and laying a light line to transport material to the various sections of the besiegers' lines. This last was most important as before its construction everything had to be brought up by hand, a painful and laborious duty, which, as eye-witnesses attest, was performed with the utmost calm and perseverance by the troops of all arms.

In September, the 28 cm. howitzers were disembarked at Dalny, and brought up. The railway was utilised as far as it went, but for the rest of the distance these pieces were dragged across country by man-power in a manner reminiscent of the transport of

north-western advanced works. The two chief lines of attack were directed, one against the northern section (Kikuan and Erlung forts), and the other against the north-western works (Roiusan), and on these lines the trenches were constructed for the approach.

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the ancient Egyptian obelisks. Three companies of infantry were detailed for each howitzer. The rate of progress was some 50 yards an hour. Large stores of 28 *cm.* shell were collected at various points. These shell were brought along the light railway in trucks drawn by men. These howitzers, now employed for the first time in siege warfare, were mounted on the Wolf Hills, and behind Takushan. From the 1st of October, these batteries attacked the northern section. Later on more howitzers were mounted to fire on Roiusan, and later again, after the capture of 203 Metre Hill, others to bombard the old city and the fleet in the inner harbour. The howitzers were grouped in batteries of two or four. Concrete platforms were used. The batteries were perfectly concealed from view, but to add to their invisibility smokeless powder was employed (though it had to be abandoned later).

After the capture of Fort Kuropatkin and the surrounding terrain, the approaches were chiefly directed against the forts of the northern section, which comprised the most powerful portion of the fortress.

By the middle of October the trenches had advanced so far that General Noghi decided to attack an advanced work of the Panhungshan fort, which was necessary as a supporting point for the last advance against the principal forts.

The attack was made on the 16th October, after a preparation by the 28 *cm.* howitzers, and batteries of medium calibre and field guns. This artillery fire had such effect that after three hours a battalion of infantry was able to capture the work. On the other side a trench in the Erlung group was captured. During the night the Russians as usual made desperate attempts to recapture the works, but without success.

From these two positions further advances by sap were made. On the 26th of October it was decided to make another general assault. The 2nd November was the Mikado's birthday, and General Noghi hoped to present the fortress of Port Arthur as his offering. Six hours' bombardment preceded the infantry attack. The assaulting columns consisted of seven regiments from the 9th and 11th Divisions. The fighting continued without intermission day and night till the 30th, the most stubborn resistance being met with, especially round the Erlung and Kikuan forts. Hand to hand encounters with the bayonet were frequent, and free use was made of hand grenades and mines. Several works were taken and re-taken over and over again, but eventually all the advanced works of the northern section remained in the hands of the Japanese. On the 31st, the latter's trenches reached the outworks of the Sungshushan Fort of the Erlung group, and the easternmost fort of the Kikuan group. Thus the end of October saw the Japanese in touch with the ceinture in front of the northern section, and on the west they had made some progress by the capture of Namako-yama. But on the whole September and October had not helped much in the advance, and the losses reached the unheard of figure of 23,000 men.

Siege operations in November and December. Capture of 203 Metre Hill and Northern Forts. Destruction of the Russian Fleet. Last assaults.—The Japanese now pursued their sap work with redoubled vigour. But the rocky nature of the soil, and the freezing of the earth as winter came on, made progress slow. The troops had to be protected against the cold; this was done by building 50-men-shelters half-buried in the ground. The direction of the attack was against the northern main forts, and the north-western hills.

There was now a lull in the assault for about a month. But this time was utilised for another and more important form of attack—the mine. The Japanese now began to advance by driving galleries against the ditches of the Erlung and Kikuan forts. Thus on the 17th November, they succeeded in blowing in the counterscarp, and taking the wall of the chief works of the Erlung and Sungshushan groups. These operations were opposed by the Russians with sorties and counter-mines.

Some days were spent in local attacks, but without success. At the beginning of November, however, the Japanese received an additional reinforcement in the shape of the whole 7th Division.

This signalled a more active phase of operations. General Noghi decided on a general attack on the northern section, more especially 203 and 210 Metre Hills. From the 26th November on, ten days were spent in the most bloody fighting, both sides suffering incredible losses, though the Japanese were naturally the more affected. But Noghi was resolved to make any sacrifice for 203 Metre Hill, for that would give him an observing station to direct the fire against the inner harbour, and would command the fortress.

The 1st and 7th Divisions were detailed for the assault on the Roiusan works, and the 9th and 11th for that on the northern section between the Erlung and Kikuan groups. The former succeeded in obtaining a noteworthy advantage, but the efforts of the latter had little effect.

After three days' severe fighting the Japanese obtained a footing on the 203 Metre Hill, and at once threw up sand-bag shelters in front of the still occupied Russian trenches. Here ensued a terrible hand to hand struggle with the bayonet, rifle-butt and hand grenades, which ended with the final retirement of the Russians from the summit. They still, however, held 210 Metre Hill and Red Hill, although the assaults were renewed throughout the day and night of the 1st December.

Deep trenches were now constructed by the Japanese, which gave complete shelter from the Russian fire and the bombardment of 210 Metre Hill was resumed. When these trenches had made sufficient progress, on the morning of the 5th, an assault was ordered which as usual was preceded by heavy fire from every available gun. Eight battalions were detailed for this duty. As a preliminary the spirits of these troops were raised to the highest pitch by their being marched down to the trenches with colours flying. At 3 p.m.

the assaulting party debouched from the trenches. But it was found that the powerful artillery had done its work well. The summit of 210 Metre Hill was deserted. Hundreds of bodies, abandoned weapons, ruins of trenches, etc., testified to the severity of the struggles of the last few days. But at last the Japanese were masters of the whole of the Roiusan Hill, and could cast their glances over the city and harbour of Port Arthur.

The next act was to make use of the captured positions to assist in bombarding the Russian fleet with the 28 cm. howitzers. Blockade having proved of little avail, the only alternative was to destroy the ships where they lay, and to this end the 28 cm. howitzers appeared most suitable.

The Roiusan heights were, however, still commanded by the Table Mountain forts, and therefore could not be used for the howitzers themselves, but only as a position for observatories. The Japanese constructed deep trenches for the observers, who watched the fire of their batteries with the hyposcope, and telephoned results. The batteries were in a position near Hashimako-yama, some 8 kilometres from their target.

Before the end of September, the Russian battleships had already suffered severely from the artillery fire. Early in November, the damage became so serious that the ships could no longer take the sea, and the crews had to be disembarked. But after the capture of Roiusan, five of the principal ships, the battleships *Pobieda*, *Retvisan*, *Peresviet*, and *Poltava* and the cruiser *Baian* were partially sunk. The cruiser *Sebastopol* had escaped scatheless, and ran out of harbour to take shelter behind the Tiger Peninsula. Here, unfortunately, there was no protection from the Japanese torpedo-boats, and in a few days this vessel also was out of action.

Thus thanks to the powerful aid of the land artillery, the duties of the Japanese fleet at Port Arthur were fulfilled. The ships accordingly put to sea to return to the mother country, there to refit, and prepare for the coming struggle with the Russian Baltic fleet. Admiral Togo, with unusual generosity, in his order expressing his thanks to the fleet, attributed the final success to what he termed the "incomparable valour" of the besieging army. This affords another proof of the intimate and harmonious co-operation between the Japanese land and sea forces.

While the bombardment of the fleet was proceeding with such vigour, the besiegers did not fail to pay considerable attention to the old city and arsenal. The excellent work of the Japanese observers was attended with correspondingly striking results. The city was soon a mass of ruins. Lack of ammunition prevented the defenders from replying with similar intensity of fire. At the same time the trenches were pushed on against the northern and western sections, the bombardment of the forts continued, and mines were largely employed.

On the 18th December, the Japanese exploded a mine under one of the large Kikuan forts, and rushed to the assault over the

smoking ruins. The heroic defenders, however, stood their ground, and it was not till night that this, the first of the large ceinture forts, fell into the hands of the Japanese. The main result was the evacuation of all the Kikuan works.

Another, and far more serious loss befell the Russians about this time. On the 15th December, a 28cm. shell burst in a bomb-proof in this very fort, killing General Kondratenko who was there with some officers discussing plans for meeting the Japanese mines. Thus died the man who had been the real heart and soul of the defence.

On the 28th December, the great Erlung Fort was captured in a similar manner to the Kikuan Fort, by an assault over a breach formed by exploding several mines. With this work the Japanese took 4 medium and 7 light guns, and 30 of various light Q.-F. and machine gun natures. This was typical of the armament of all these forts.

Next the Saugsushan Fort fell, and then the Japanese were in possession of the whole northern face. The Russians retired on "Aquila's Nest."

On the north-west the Japanese were working southwards to isolate the fortress from Laoshan, an object which was practically effected by the 27th December, so that this promontory, which it was supposed would act as a sort of central redoubt for the defence, was actually of no value.

Thus at the end of 1904, the Japanese were masters of the northern section of the ceinture, and could have attacked the inner forts on Aquila's Nest, etc. On the west their progress was still arrested by the Table Mountain forts. But these latter were bound to fall when the Japanese captured the heights on the left bank of the Lun-ho.

The situation was thus very serious indeed for the defence, and the continuous bombardment of the city, which had lately reached its height, was sapping the morale of the men. But to bring matters to a head the Japanese determined on another general assault. On the 1st January, at 9 A.M., the fighting began, and by 4 P.M. the Japanese had taken some of the inner works on the northern section and had made some progress to the west. At 5 P.M. a Russian flag of truce presented itself at the Japanese outposts, with a letter from General Stoessel to General Noghi offering to surrender the fortress.

The Capitulation.—On the 29th of December, Stoessel had held a council of war, and considered the possibility of further resistance, in view of the importance of the positions already captured by the enemy, the want of ammunition for the medium guns, the lack of medical necessities for the numerous sick and wounded, and the physical and moral condition of the garrison.

Seventeen officers were against the surrender, and only four in favour of it. Stoessel did not vote, but although he thanked the council for their desire to fight to the last, he began to make up his own mind to surrender. And, as already narrated, on the 1st January

after the Japanese assault, he gave the orders to suspend hostilities and sent out the flag of truce, though without informing the troops, who knew nothing till the negotiations were concluded. At the same time all ships fit to put to sea were ordered to sail for neutral ports, and the explosives which had been kept in reserve were employed in completing the destruction of the remaining vessels.

General Noghi, who apparently did not believe that the condition of affairs in the fortress was yet desperate, was at Dalny, and did not receive the letter till 9 p.m. He immediately telegraphed to the Mikado and received an assent, coupled with an expression of admiration for the heroism of the defenders of Port Arthur.

Everything had apparently been already prepared as far as the Japanese were concerned, for the negotiations were pushed through with unexampled rapidity, and by the evening of the 2nd of January, the conditions of the surrender were settled, *viz.*, that the fortress should be handed over as it stood, and that the garrison should be prisoners, with the honours of war. Officers were to be permitted to return to their country on parole, on condition of taking no further part in the war.

On the 3rd and following days the Japanese took over the forts and all war material.

On the 12th of January, the Japanese entered Port Arthur. Representatives of all the regiments, with their colours, took part in the ceremony, which consisted of a march through the whole fortress and town, a march past before General Noghi and a memorial service for the fallen. At the latter General Noghi himself pronounced the funeral oration.

The Japanese obtained in this surrender:—

Prisoners, 41,641 men, among whom there were 12 Generals, 5 Admirals, and 1,439 officers and officials of similar rank, including 529 sick and wounded. Of the remainder 15,174 were sick and wounded. Only half the original strength of the garrison remained fit for work.

The losses of the Russians are put at some 26,000 men, while those of their enemies reached the enormous total of 55,000 of whom 11,000 died on the field. These are, however, the official Japanese figures, and there is reason to believe that the losses were even heavier.

Amongst the war material handed over were 52 pieces of ordnance of various calibres, including the naval guns, and a great amount of artillery material (but mostly old and unserviceable). In the inner harbour the victors found 4 battleships, 2 armoured cruisers and 3 protected cruisers, all more or less seriously damaged, and also some 50 smaller vessels most of which were in good condition.

The ships required considerable repairs, and their capture was therefore not of so much advantage as it should have been. The harbours too were unsafe from the numerous floating mines. But the Japanese despatched large numbers of workmen to the fortress. These men repaired damages and put up new fortifications so that, as

the Russians assert, a few months after the surrender Port Arthur became in fact what they themselves had wished to make it, *viz.*, an impregnable place of arms.

REVIEW.

A course of twelve lectures (illustrated) delivered to Officers and Non-Commissioned Officers in connection with the Manual of Horse and Stable Management by Lt.-Col. G. L. Holdsworth, 7th Queen's Own Hussars, published by Gale and Polden, Aldershot, price 1s. 6d., 27 pages, 10 diagrams.

There is no preface or explanatory note to this pamphlet and we are therefore at a loss to quite grasp the intention or the object of the lectures.

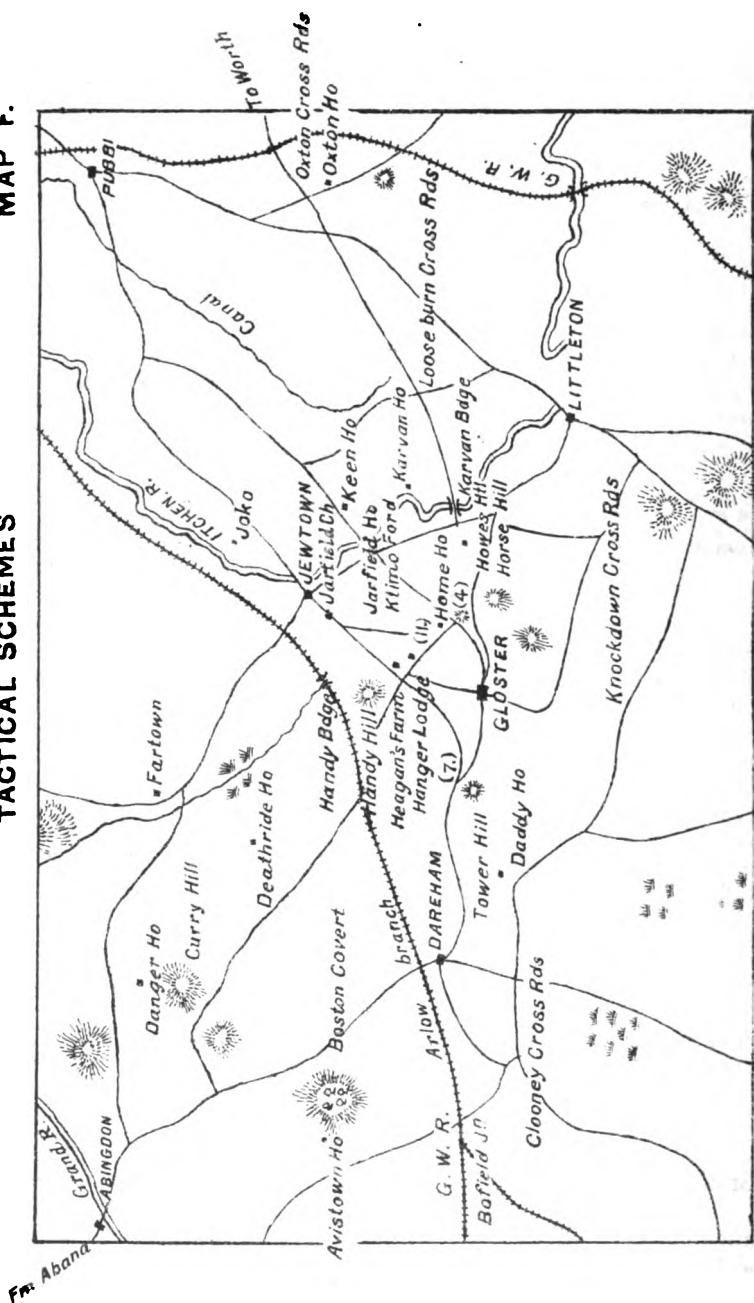
The larger number of them consist of elementary notes on anatomy and physiology condensed into very small space. For instance, lecture 3 on the Blood consists of 42 lines only of rather large type.

In certain anatomical facts the author falls into error. On page 13 he states that *all* the cavities of the body that have external openings are lined with mucus membranes, whereas as every first year medical student knows that there are exceptions in both human beings and animals.

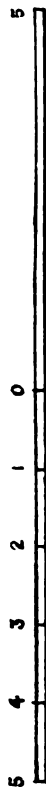
On page 14 there is a good diagram showing the dentition of the horse; this is a matter that the author is at home on. The diagram is a valuable one and should be useful, but we think it could be improved had the periods, when the horse loses the marks in the incisors, been added.

TACTICAL SCHEMES

MAP F.



Scale of Miles



(11) Hamville Cross Rds
(7) Farby
(4) Heath Hill

TACTICAL SCHEME COMPETITION, APRIL 1906

WINNING SOLUTION.

BY "VIGILANTIA NON CADET."

Owing to the envelope containing the name of the Member submitting this solution having been inadvertently mislaid, the Secretary would be glad if the Member in question would communicate with him.

A Red Force is advancing eastwards from ABUSIR towards WORTH. You are in command of the Red Advanced Guard, strength as per margin. On the evening of the 31st March you bivouacked in the vicinity of ABBEVILLE. Next morning at 4 A.M. you receive the following telegram:—

1 Regiment Cavalry.
4 Companies M. I.
1 Brigade R. F. A.
1 Brigade Infantry.

To O. C. Advanced Guard, ABBEVILLE. From C. S. O. Red Force, ABUSIR, 31st March, 3-30 A.M.

Spies report that a Blue Force estimated at an infantry division with one regiment cavalry is at WORTH. Stop. We march to GLOSTER to-day. Stop. Advance *vid* DAREHAM and GLOSTER and secure the passages of the ITCHEN.

Advancing in accordance with the above orders you meet hostile cavalry patrols, on the line DOWNS HOUSE-DOON TOWN, which retire before you. On passing the eastern end of GLOSTER your vanguard cavalry comes under artillery fire from the east of the ITCHEN. Friendly inhabitants inform you that the bridges over the ITCHEN were intact this morning and that a small force of one battery, some cavalry, and some infantry has just arrived on the east bank of the River ITCHEN from the direction of WORTH.

REQUIRED—As Staff Officer to the G. O. C. you will write—

- (1) An appreciation of the situation (for his use).
- (2) The orders which would be issued.

APPRECIATION.

Red Staff Officer's appreciation of the situation at 7-45 A.M. on 1st April.

(Presumably this Staff Officer joined Red Advance Guard shortly after it had left ABBEVILLE.)

Red Advance Guard left ABBEVILLE at 5-30 A.M. this morning, and, on arrival of van guard cavalry at east end of GLOSTER at 7-30 A.M., enemy opened artillery fire from east of the ITCHEN. Previous to this hostile cavalry patrols were met on the line DOWNS HOUSE-DOON TOWN and retired before us,

From personal and other reconnaissances, and from information by friendly inhabitants, confirmed by our cavalry, the following facts may be taken as accurate:—

- (a) Bridges over ITCHEN are still intact.
- (b) Enemy are in possession of bridges from JEW TOWN to Railway bridge east of NORMANBY BRIDGE, and are doubtless, watching the crossings north of JEW TOWN.
- (c) Enemy's strength is 1 battery and some cavalry and infantry.
- (d) Enemy have only just arrived (7-30 A.M.) at the ITCHEN and they are, undoubtedly, the Advance Guard of the Division reported at WORTH.

Hence it may be deduced that Blue Advance Guard has been shoved on to seize crossings on ITCHEN, and to hold them at all costs till the arrival of the WORTH Division. They have succeeded in obtaining possession of the crossings. It is our business, now, to dislodge them before the arrival of supports from WORTH.

WORTH is 15½ miles from LITTLE HILL.

ABUSIR is 18½ "

ABUSIR is 18 " by rail from JEW TOWN.

JEW TOWN is a little over 4 miles from LITTLE HILL.

It must be borne in mind that after the enemy have been dislodged from LITTLE HILL, they have, still, 2 artillery positions:—

- (1) OXTON HILL, the advantage of which will be largely discounted with LITTLE HILL in our possession and with our larger number of guns.
- (2) The vicinity of COURT HILL and POOR HILL. This position, though about 7,000 yards from KELVERSTON HILL, is of great importance, and if occupied by enemy's guns will give us much trouble. To anticipate the enemy in possession of this position 3 companies M. I. have been shoved on to establish themselves there, with a view to the Battery being placed there, as soon as it is occupied, and additional guns being sent up on your arrival.

Presuming you and enemy started this morning at 5-30 A.M. the latter would arrive at LITTLE HILL a good hour before you did. But you have the use of the Railway as far as JEW TOWN. Assuming therefore that you act on O.C. Red Advance Guard's telegram despatched at 7-45 this morning (copy attached), we can depend on support from you before enemy's reinforcements render our position untenable.

You have Map E. on which the topographical features are well shown, so they need not be enlarged upon. The key of the position as it now stands is LITTLE HILL, which dominates the crossings of the ITCHEN to east and north, and commands the roads and approaches from north and north-east.

The ARLow BRANCH G.W.R. is of great importance to us, and as it must connect with the CARLTON BRANCH the line has been blocked at the bridge east of KLONMELL HILL. The

CARLTON BRANCH, G. W. R., running north and south can be made little use of by the enemy, though he will, probably, endeavour to have a train ready at ORTON HO to shove troops down to POOR HILL.

We are, at least, 3 to 1 in superior strength to present BLUE FORCE. This being so, O.C. Red Advance Guard is, justly, confident of his ability to dislodge enemy from LITTLE HILL, and occupy it himself. Two batteries will be placed here and infantry thrown out towards MILLET HILL and MILL BURY.

POOR HILL will be held by dismounted troops, and endeavour will be made, later on, to place the third battery also in that locality. From KARVAN BRIDGE north, the crossings will be watched and an attempt made to establish troops on the line LORD'S HILL-MAPPING CROSS ROAD, in order to guard the passages over the DEEP CANAL.

To recapitulate:—

- (a) With our available force, we can and intend to place batteries on LITTLE HILL, and to throw out infantry towards MILLET HILL and MILL BURY.
- (b) POOR HILL will also be occupied.
- (c) The northern crossings, from KARVAN, will be watched and endeavour made to establish troops in the vicinity of LORD'S HILL.

We are confident that the above can be effected, but to retain these positions, on the advance of BLUE DIVISION, we rely on support from you.

To this end, telegram No. X was despatched to you.

Should circumstances prevent your using the Railway, as suggested in the telegram, we depend on you to shove on all available mounted troops with a Brigade R. F. A. to enable us to retain the positions we intend to occupy.

Enemy's infantry cannot arrive at LITTLE HILL before 10-30 A.M. at earliest.

By that hour we should be in the positions indicated above.

Our positions will be secure if you support us, by rail or road, before 10-30 A.M. or 11 A.M. at latest.

Assuming that you receive our telegram (duplicate sent by mounted orderly) about 8 A.M. somewhere about BOTFIELD JUNCTION, we rely on receiving support from you before 11 A.M. at latest.

V. N. C., MAJOR,
Staff Officer.

Copy of telegram X.

1-4-06. Despatched at 7-50 A.M. from GLOSTER.

From O. C. Red Advance Guard. To C. S. O. Red Force.
BOTFIELD JUNCTION

No. X.—Am taking advantage of my present superior strength to attack enemy and secure passages of ITCHEN. Stop. I depend on you for support by rail or road by 10-30 A.M. to-day. Stop. Guns and Mounted Infantry required.

OPERATION ORDERS.

By Colonel A., Commanding Red Advance Guard.
No. II]. GLOSTER 1st April 1906

I.—Enemy's patrols have retired across the ITCHEN.

Passages of that river are held by enemy, estimated at one battery, one regiment cavalry and some infantry.

Bridges over ITCHEN were intact this morning.

Our Main Body is expected at GLOSTER before noon to-day.

II.—The Advance Guard troops will attack and secure the passages of the ITCHEN, from LITTLETON to JEW TOWN.

III.—The 1st regiment cavalry with one company M.I. (Lieutenant-Colonel B, 1st regiment cavalry) will watch the ITCHEN from JEW TOWN to N.-E. of LATTEN-HO. The Railway line will be blocked at the bridge east of KLONMELL HILL. Troops will be sent across the ITCHEN and endeavour made to hold the LORDS HILL-MAPING CROSS ROADS.

Three companies M.I. and the Brigade R.F.A. with artillery escort will proceed at once *via* HOLLY OAK HO. and JEW PARK.

The Brigade R.F.A. will come into action on KALVERSTON HILL. The M.I. will move on *via* KILKELLY, and establish themselves on the line COURT HILL and MOUNTS HILL.

Holding Attack—Will be made by No. 1 Battalion C.O.L. (Lieutenant-Colonel C) less 2 companies, escort to guns, on KARVAN BRIDGE. This attack will not be pushed home till the main attack is fully developed, unless KARVAN BRIDGE be found unoccupied.

Main Attack—Will be made by Nos. 2 and 3 Battalions (Lieutenant-Colonel C in command). A vigorous attack will be made, under cover of the artillery fire from KALVERSTON HILL, on the bridge at LITTLETON, the main objective being LITTLE HILL.

Reserve—No. 4 Battalion (C.O. Lieutenant-Colonel E) will be under cover of the hill south of GLOSTER CHURCH, one company being detached to JEW TOWN Railway Station.

IV.—Baggage and Ammunition Columns will close up in rear of the Reserve.

V.—Field Hospitals will establish stations in GLOSTER.

VI.—Signaling communications to be established between all units.

VII.—Reports to be sent to O.C. at KALVERSTON HILL.

A. N. C. Major

Staff Officer.

Directed to Adjutants—Infantry Battalions.

R.F.A.

Orderly Officer R.A.M.C.

M.I.

Signal and T. Corps

Copy by special messenger to C.S.O. Red Force.

Issued at 8 A.M.

REMARKS BY THE ADJUDICATOR ON THE TACTICAL COMPETITION PRIZE SCHEME, APRIL 1906.

Hardly a single candidate took a sufficiently broad and comprehensive survey of the topographical conditions confronting him and which he could have grasped by a closer study of the map. The Itchen forms a great sweep or re-entrant which is all in favour of the Reds and to the disadvantage of the Blues. The latter anticipates the Reds in the possession of the river crossings and is already, evidently, in occupation of the MOUNT LOONY position extending south no doubt to LITTLE HILL. The Red A. G. Commander has been given a specific duty to carry out. He cannot consider that done until he himself is on that position with outposts out further east protecting not only the Main Body coming to GLOSTER but also the crossings. Clearly then he must turn Blue out before he is further strengthened. But how. Make a frontal attack? He would in all probability be repulsed with heavy loss and nothing to show for it in return. Should he seek for a topographical key point? Yes. But where? It should be on a flank and to the rear of the position being attacked, and it should be so commanding that its capture or occupation would result in the crumpling up of the whole of the enemy's position at a blow.

The approach to the enemy's right flank is too open and offers no such command of ground, though it certainly is nearer Blues' line of retreat. On the other flank it is quite different. Now place your finger on MILLET HILL. Let the Commander Red A. G. imagine himself in possession of that commanding ground with the bulk of his troops. What would be the immediate result notwithstanding all the fatigue and trouble undergone to get there. LITTLE HILL would be completely turned and the whole of the MOUNT LOONY position enfiladed. LITTLE HILL is not a decisive key point for the simple reason that it would have to be attacked frontally and the Blues could swing back on MILLET HILL and make matters worse.

Now in order to gain MILLET HILL he should seize NORMANBY bridge which in turn is dominated by the high ground about POOR HILL, the seizure of which should be the prime consideration. To divert attention an active mobile force of all arms should be sent round by KAFFIR FARM to feint vigorously and Blue should be kept fully occupied in front by a holding attack at KARVAN BR. and a secondary one at LITTLETON.

Now comes the important consideration of the distribution of his force.

The front.—One squadron cavalry, one company M. I. and 2 guns should be ample. It consists of all three arms and is highly mobile.

The holding attacks.—Deny strength here as the Main Body is coming up. One battalion and four guns with a few troopers is ample.

after the Japanese assault, he gave the orders to suspend hostilities and sent out the flag of truce, though without informing the troops who knew nothing till the negotiations were concluded. At the same time all ships fit to put to sea were ordered to sail for neutral ports, and the explosives which had been kept in reserve were employed in completing the destruction of the remaining vessels.

General Noghi, who apparently did not believe that the conclusion of affairs in the fortress was yet desperate, was at Dalny, and did not receive the letter till 9 P.M. He immediately telegraphed to the Mikado and received an assent, coupled with an expression of admiration for the heroism of the defenders of Port Arthur.

Everything had apparently been already prepared as far as the Japanese were concerned, for the negotiations were pushed through with unexampled rapidity, and by the evening of the 2nd of January, the conditions of the surrender were settled, viz., that the fortress should be handed over as it stood, and that the garrison should be prisoners, with the honours of war. Officers were to be permitted to return to their country on parole, on condition of taking no further part in the war.

On the 3rd and following days the Japanese took over the forts and all war material.

On the 12th of January, the Japanese entered Port Arthur. Representatives of all the regiments, with their colours, took part in the ceremony, which consisted of a march through the whole fortress and town, a march past before General Noghi and a memorial service for the fallen. At the latter General Noghi himself pronounced the funeral oration.

The Japanese obtained in this surrender:—

Prisoners, 41,641 men, among whom there were 12 Generals, 3 Admirals, and 1,439 officers and officials of similar rank, including 529 sick and wounded. Of the remainder 15,174 were sick and wounded. Only half the original strength of the garrison remained fit for work.

The losses of the Russians are put at some 26,000 men while those of their enemies reached the enormous total of 55,000 of whom 11,000 died on the field. These are, however, the official Japanese figures, and there is reason to believe that the losses were even heavier.

Amongst the war material handed over were 52 pieces of ordnance of various calibres, including the naval guns and a great amount of artillery material but mostly old and unserviceable. In the inner harbour the victors found 4 battle ships, 2 armoured cruisers and 3 protected cruisers, all more or less seriously damaged, and also some 50 smaller vessels most of which were in good condition.

The ships required considerable repairs, and their capture was therefore not of so much advantage as it should have been. The harbours too were unsafe from the numerous floating mines. But the Japanese despatched large numbers of workmen to the fortress. These men repaired damages and put up new fortifications so that as

the Russians assert, a few months after the surrender Port Arthur became in fact what they themselves had wished to make it, *viz.*, an impregnable place of arms.

REVIEW.

A course of twelve lectures (illustrated) delivered to Officers and Non-Commissioned Officers in connection with the Manual of Horse and Stable Management by Lt.-Col. G. L. Holdsworth, 7th Queen's Own Hussars, published by Gale and Polden, Aldershot, price 1s. 6d., 27 pages, 10 diagrams.

There is no preface or explanatory note to this pamphlet and we are therefore at a loss to quite grasp the intention or the object of the lectures.

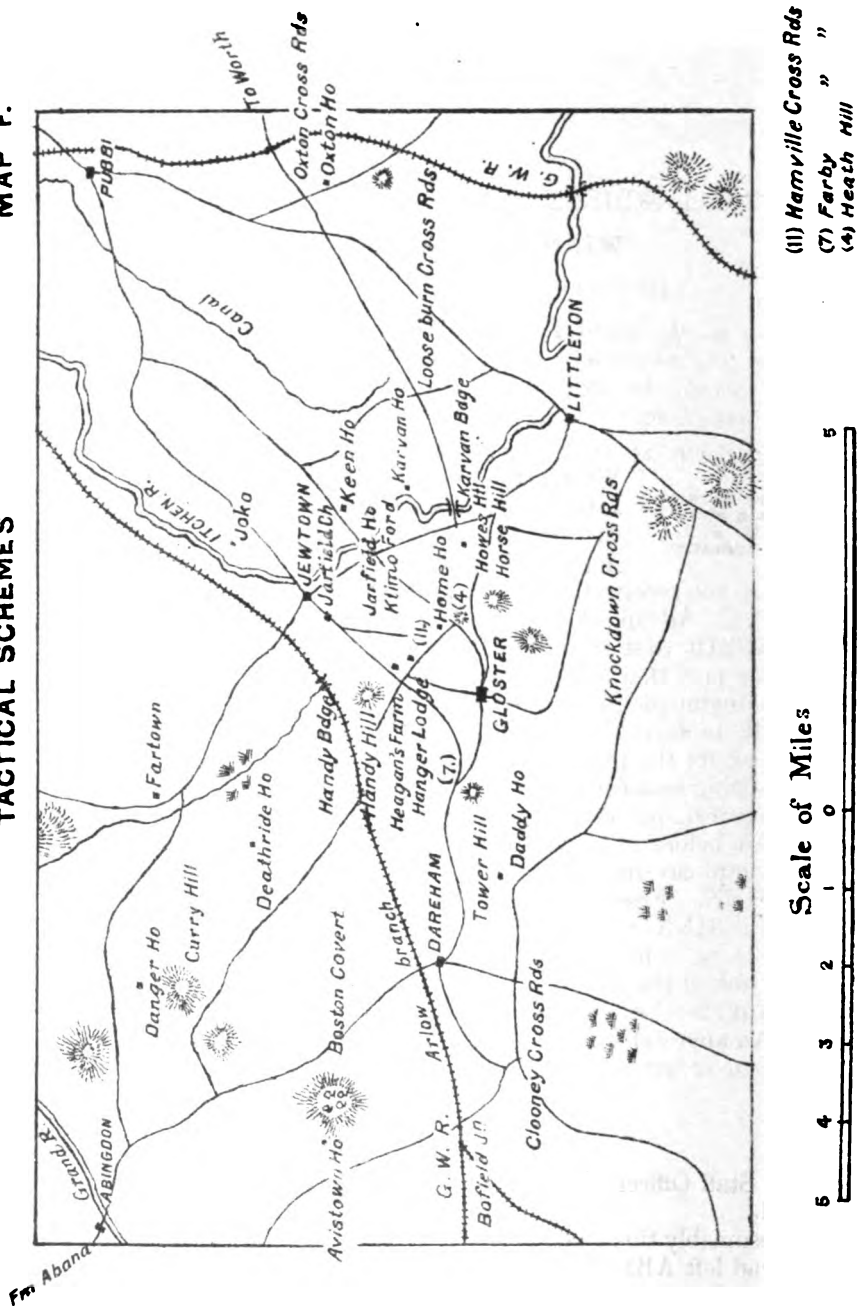
The larger number of them consist of elementary notes on anatomy and physiology condensed into very small space. For instance, lecture 3 on the Blood consists of 42 lines only of rather large type.

In certain anatomical facts the author falls into error. On page 13 he states that *all* the cavities of the body that have external openings are lined with mucus membranes, whereas as every first year medical student knows that there are exceptions in both human beings and animals.

On page 14 there is a good diagram showing the dentition of the horse; this is a matter that the author is at home on. The diagram is a valuable one and should be useful, but we think it could be improved had the periods, when the horse loses the marks in the incisors, been added.

TACTICAL SCHEMES

MAP F.



TACTICAL SCHEME COMPETITION, APRIL 1906

WINNING SOLUTION.

BY "VIGILANTIA NON CADET."

Owing to the envelope containing the name of the Member submitting this solution having been inadvertently mislaid, the Secretary would be glad if the Member in question would communicate with him.

A Red Force is advancing eastwards from ABUSIR towards WORTH. You are in command of the Red Advanced Guard, strength as per margin. On the evening of the 31st March you bivouacked in the vicinity of ABBEVILLE. Next morning at 4 A.M. you receive the following telegram :—

To O. C. Advanced Guard, ABBEVILLE. From C. S. O. Red Force, ABUSIR, 31st March, 3-30 A.M.

Spies report that a Blue Force estimated at an infantry division with one regiment cavalry is at WORTH. Stop. We march to GLOSTER to-day. Stop. Advance *vid* DAREHAM and GLOSTER and secure the passages of the ITCHEN.

Advancing in accordance with the above orders you meet hostile cavalry patrols, on the line DOWNS HOUSE-DOON TOWN, which retire before you. On passing the eastern end of GLOSTER your vanguard cavalry comes under artillery fire from the east of the ITCHEN. Friendly inhabitants inform you that the bridges over the ITCHEN were intact this morning and that a small force of one battery, some cavalry, and some infantry has just arrived on the east bank of the River ITCHEN from the direction of WORTH.

REQUIRED—As Staff Officer to the G. O. C. you will write—

- (1) An appreciation of the situation (for his use).
- (2) The orders which would be issued.

APPRECIATION.

Red Staff Officer's appreciation of the situation at 7-45 A.M. on 1st April.

(Presumably this Staff Officer joined Red Advance Guard shortly after it had left ABBEVILLE.)

Red Advance Guard left ABBEVILLE at 5-30 A.M. this morning, and, on arrival of van guard cavalry at east end of GLOSTER at 7-30 A.M., enemy opened artillery fire from east of the ITCHEN. Previous to this hostile cavalry patrols were met on the line DOWNS HOUSE-DOON TOWN and retired before us,

From personal and other reconnaissances, and from information by friendly inhabitants, confirmed by our cavalry, the following facts may be taken as accurate:—

- (a) Bridges over ITCHEN are still intact.
- (b) Enemy are in possession of bridges from JEWTON to Railway bridge east of NORMANBY BRIDGE, and are, doubtless, watching the crossings north of JEWTON.
- (c) Enemy's strength is 1 battery and some cavalry and infantry.
- (d) Enemy have only just arrived (7-30 A.M.) at the ITCHEN and they are, undoubtedly, the Advance Guard of Blue Division reported at WORTH.

Hence it may be deduced that Blue Advance Guard has been shoved on to seize crossings on ITCHEN, and to hold them at all costs till the arrival of the WORTH Division. They have succeeded in obtaining possession of the crossings. It is our business, now, to dislodge them before the arrival of supports from WORTH.

WORTH is $15\frac{1}{2}$ miles from LITTLE HILL.

ABUSIR is $18\frac{1}{2}$ "

ABUSIR is 18 " " by rail " from JEWTON.

JEWTON is a little over 4 miles from LITTLE HILL.

It must be borne in mind that after the enemy have been dislodged from LITTLE HILL, they have, still, 2 artillery positions:—

- (1) OXTON HILL, the advantage of which will be largely discounted with LITTLE HILL in our possession and with our larger number of guns.
- (2) The vicinity of COURT HILL and POOR HILL. This position, though about 7,000 yards from KELVERSTON HILL, is of great importance, and if occupied by enemy's guns will give us much trouble. To anticipate the enemy in possession of this position 3 companies M. I have been shoved on to establish themselves there, with a view to one Battery being placed there, as soon as it is occupied; and additional guns being sent up on your arrival.

Presuming you and enemy started this morning at 5-30 A.M. the latter would arrive at LITTLE HILL a good hour before you do. But you have the use of the Railway as far as JEWTON. Assuming, therefore, that you act on O. C. Red Advance Guard's telegram despatched at 7-45 this morning (copy attached), we can depend on support from you before enemy's reinforcements render our positions untenable.

You have Map F. on which the topographical features are well shown, so they need not be enlarged upon. The key of the position, as it now stands, is LITTLE HILL, which dominates the crossings of the ITCHEN to east and north, and commands the roads and approaches from north and north-east.

The ARLOW BRANCH, G. W. R., is of great importance to us, and as it must connect with the CARLTON BRANCH, the line has been blocked at the bridge east of KLONMELL HILL. The

CARLTON BRANCH, G. W. R., running north and south can be made little use of by the enemy, though he will, probably, endeavour to have a train ready at ORTON HO to shove troops down to POOR HILL.

We are, at least, 3 to 1 in superior strength to present BLUE FORCE. This being so, O.C. Red Advance Guard is, justly, confident of his ability to dislodge enemy from LITTLE HILL, and occupy it himself. Two batteries will be placed here and infantry thrown out towards MILLET HILL and MILL BURY.

POOR HILL will be held by dismounted troops, and endeavour will be made, later on, to place the third battery also in that locality. From KARVAN BRIDGE north, the crossings will be watched and an attempt made to establish troops on the line LORD'S HILL-MAPPING CROSS ROAD, in order to guard the passages over the DEEP CANAL.

To recapitulate:—

- (a) With our available force, we can and intend to place batteries on LITTLE HILL, and to throw out infantry towards MILLET HILL and MILL BURY.
- (b) POOR HILL will also be occupied.
- (c) The northern crossings, from KARVAN, will be watched and endeavour made to establish troops in the vicinity of LORD'S HILL.

We are confident that the above can be effected, but to retain these positions, on the advance of BLUE DIVISION, we rely on support from you.

To this end, telegram No. X was despatched to you.

Should circumstances prevent your using the Railway, as suggested in the telegram, we depend on you to shove on all available mounted troops with a Brigade R. F. A. to enable us to retain the positions we intend to occupy.

Enemy's infantry cannot arrive at LITTLE HILL before 10-30 A.M. at earliest.

By that hour we should be in the positions indicated above.

Our positions will be secure if you support us, by rail or road, before 10-30 A.M. or 11 A.M. at latest.

Assuming that you receive our telegram (duplicate sent by mounted orderly) about 8 A.M. somewhere about BOTFIELD JUNCTION, we rely on receiving support from you before 11 A.M. at latest.

V. N. C, MAJOR,
Staff Officer.

Copy of telegram X.

1-4-06. Despatched at 7-50 A.M. from GLOSTER.

From O. C. Red Advance Guard. To C. S. O. Red Force.
BOTFIELD JUNCTION

No. X.—Am taking advantage of my present superior strength to attack enemy and secure passages of ITCHEN. Stop. I depend on you for support by rail or road by 10-30 A.M. to-day. Stop. Guns and Mounted Infantry required.

OPERATION ORDERS.

By Colonel A., Commanding Red Advance Guard.

No. II]. GLOSTER, 1st April 1906.

I.—Enemy's patrols have retired across the ITCHEN.

Passages of that river are held by enemy, estimated at one battery, one regiment cavalry and some infantry.

Bridges over ITCHEN were intact this morning.

Our Main Body is expected at GLOSTER before noon to-day.

II.—The Advance Guard troops will attack and secure the passages of the ITCHEN, from LITTLETON to JEW TOWN.

III.—The 1st regiment cavalry with one company M.I., (C.O. Lieutenant-Colonel B, 1st regiment cavalry) will watch the ITCHEN from JEW TOWN to N.-E. of LATTEN-HO. The Railway line will be blocked at the bridge east of KLONMELL HILL. Patrols will be sent across the ITCHEN and endeavour made to hold the line LORD'S HILL-MAPING CROSS ROADS.

Three companies M. I. and the Brigade R. F. A. with infantry escort will proceed at once *via* HOLLYOAK-HO and JEW PARK.

The Brigade R.F.A. will come into action on KALVERSTON HILL. The M. I. will move on *via* KILKELLY, and establish themselves on the line COURT HILL and MOUNT'S HILL.

Holding Attack—Will be made by No. 1 Battalion (C. O. Lieutenant-Colonel C) less 2 companies escort to guns, on KARVAN BRIDGE. This attack will not be pushed home till the main attack is fully developed, unless KARVAN BRIDGE be found unoccupied.

Main Attack—Will be made by Nos. 2 and 3 Battalions (Lieutenant-Colonel C in command). A vigorous attack will be made, under cover of the artillery fire, from KALVERSTON HILL, on the bridge at LITTLETON, the main objective being LITTLE HILL.

Reserves.—No. 4 Battalion (C. O. Lieutenant-Colonel E) will be under cover of the hill south of GLOSTER CHURCH, one company being detached to JEW TOWN Railway Station.

IV.—Baggage and Ammunition Columns will close up in rear of the Reserve.

V.—Field Hospitals will establish stations in GLOSTER.

VI.—Signalling communications to be established between all units.

VII.—Reports to be sent to O. C. at KALVERSTON HILL.

V. N. C., MAJOR,
Staff Officer.

Dictated to Adjutants, Infantry Battalions.

" " " R. F. A.

" " " Orderly Officer, R.A.M.C.

" " " " M. I.

" " " " S. and T. Corps.

Copy by special messenger to C.S O. Red Force.

Issued at 8 A.M.

REMARKS BY THE ADJUDICATOR ON THE TACTICAL COMPETITION PRIZE SCHEME, APRIL 1906.

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The approach to the enemy's right flank is too open and offers no such command of ground, though it certainly is nearer Blues' line of retreat. On the other flank it is quite different. Now place your finger on MILLET HILL. Let the Commander Red A. G. imagine himself in possession of that commanding ground with the bulk of his troops. What would be the immediate result notwithstanding all the fatigue and trouble undergone to get there. LITTLE HILL would be completely turned and the whole of the MOUNT LOONY position enfiladed. LITTLE HILL is not a decisive key point for the simple reason that it would have to be attacked frontally and the Blues could swing back on MILLET HILL and make matters worse.

Now in order to gain MILLET HILL he should seize NORMANBY bridge which in turn is dominated by the high ground about POOR HILL, the seizure of which should be the prime consideration. To divert attention an active mobile force of all arms should be sent round by KAFFIR FARM to feint vigorously and Blue should be kept fully occupied in front by a holding attack at KARVAN BR. and a secondary one at LITTLETON.

Now comes the important consideration of the distribution of his force.

The feint.—One squadron cavalry, one company M. I. and 2 guns should be ample. It consists of all three arms and is highly mobile.

The holding attacks.—Deny strength here as the Main Body is coming up. One battalion and four guns with a few troopers is ample.

The decisive attack.—The remainder of Cavalry and M. I. with one battery (three arms) to move round by KILKENNY rapidly and seize the decisive objectives. Three battalions and one battery to push rapidly to their support being diverted from say DAREHAM. The O.C. A. G. should not delegate command here to another but should assume it in person. He has a preponderance of strength at a decisive and weak point. In case of failure he is very well placed for the ensuing general action when the main forces come up.

Most candidates' orders err on the side of excessive length and detail, with a tendency to interfere with regimental commanders in their legitimate duties. This fault is all the more unjustifiable in a situation, such as given in the problem, which requires swift decision and prompt action and the issue of orders of a general nature to the commanders of the feint and the holding attacks



Contour Lines
Main Road
Railway

TACTICAL SCHEME COMPETITION, OCTOBER 1906.

WINNING SOLUTION.

By "QUOT HOMINES TOT SENTENTIAT," CAPTAIN A. L. LONGHURST, 2/10 GURKHA RIFLES.

GENERAL IDEA.

1. A Red (Southern) army is operating some 10 miles east of the limit of the map against a Green (Northern) army.

2. The camel road by the LARE LAR P. and KANIGURAM is one of the lines of communication of the Red army.

3. Red army has detached a force to DOTOI to contain Green forces which are to the northward of that place. This detached force is dependent on a depôt at KANIGURAM for its supply, and in order to protect its own communications is obliged to retire by WARZAKAI north to GURBAZ on the approach of two Green forces, a Western one moving southward from DAMSARE NARAI and an Eastern one moving south-west from DARIAWASTI.

4. The rivers are in flood, the BARIALA and SHAWAL streams are impassable except at the crossing west of GURBAZ.

The inhabitants, armed tribesmen, are on the whole friendly to Red, but are inclined to maraud if opportunity offers.

SPECIAL IDEA.

1. You are in command of the Red detached force, strength as per margin, and arrive with the main body at GURBAZ at 5 P.M. on April 2nd, having marched from DOTOI that morning. Your rear guard has been engaged during the day with the Western Green force which has halted near MURSAL.

Your advanced guard has been ordered to secure the KHINA NARAI.

2. At 5-30 P.M. you receive information from the advanced guard cavalry that Green troops are occupying the KHINA NARAI.

3. Reliable information gives the strength of the Western Green force as four battalions, the Eastern one as three battalions, each force eight mountain guns and a few Mounted Infantry; you also learn that the Eastern force commenced to pass HAIDAR KHEL at 11 A.M. that morning.

4. At 5-30 P.M. your force is disposed as follows:—

<i>Rear Guard.</i>	{	2 Sections Mountain Battery WAZARKAIN.	
		2 Battalions.	
	{	1 Mountain Battery.	GURBAZ.
		$\frac{1}{2}$ Co. Sappers and Miners.	
<i>Main Body.</i>		$2\frac{1}{2}$ Battalions.	
		Field Hospital.	
	{	2nd Line Transport of force,	

Advance Guard. { $\frac{1}{2}$ Squadron Cavalry MANAI KACH.
 1 Section Mountain Battery.
 $\frac{1}{2}$ Battalion.

5. Required—

- (a) An appreciation of the situation with a brief description of your proposed plan.
- (b) The orders you *issue* that evening.

APPRECIATION.

The Green converging forces have, for objective, the line of communication of Red main army, *viz.*, the LARÉ LAR-KANIGURAM road, to attain which they must dispose of, or avoid, Red's

enemy, which he can best do by offensive action ; a passive defence of GURBAZ would involve him in a converging attack by the two parts of Green force and put out of question the chance of doing Green any appreciable damage.

It is obvious that Red, having decided on offensive action, and being superior to either Green force singly but inferior to them united, must "contain" one and strike the other ; this should be facilitated by the facts that Green E. and W. forces are dependent on visual signalling for communication (if we accept the long detour *via* AKHUNDAN) ; each commander will have his own views on the situation, and concentrated action will not be easy, as the two forces have divergent lines of communication.

The consideration for Red is, shall he strike the E. "contain" the W. force, or *vice versa* ?

Assuming that Red's containing force cannot be less against either Green force than 1 battalion 2 sections Mountain Battery, he will have remaining as a striking force 4 battalions (less necessary baggage guard) 4 sections Mountain Battery and say $1\frac{1}{2}$ troops of cavalry.

This is about equal to Green W. force but superior to Green E. force. The terrain renders it easier to contain Green W. than Green E., as the former will have to pass the defile at WARLAKAIN and advance over open country on to another defile, *viz.*, the crossing of the BARIALA.

For reasons therefore of comparative strength and of terrain Red would contain Green W. and strike Green E. At 5-30 P.M. $1\frac{1}{2}$ hours of daylight remain; though there is nearly a full moon on April 2nd, the country renders movement by night, except on the roads, most difficult, but Red can procure local guides, the inhabitants being friendly.

Dawn about 5-15 A.M.

Climate cold and bracing; but Red has just finished a march of 13 miles along a river bed, probably difficult and tiring. The Advance Guard of enemy at MURSAL, no less tired than Red, and not likely to push further up the ZOWE valley that night, as the hostile attitude of the inhabitants of the many villages in the valley would make a night march most dangerous.

Green E. force having begun to pass HAIDAR KHEL— $11\frac{1}{2}$ miles from KHINA NARAI—at 11-0. A.M., will be nearer the latter place at 5-0 P.M. than Red Advance Guard at MANAI KACH; and recognising the importance of securing the debouch will doubtless have occupied KHINA NARAI in force by nightfall, forestalling Red's Advance Guard which moreover could not arrive at that place during daylight, much less occupy it in the face of opposition.

Red's Plan for carrying out the line of action above indicated will be as follows :—

The containing force will consist of the present Rear Guard less one battalion. This force will lightly hold WARZAKAI, N., say with 2 Companies, to delay Green W. force's advance, and will take up a position prepared by the S. and M. covering the passage of the BARIALA at GURBAZ, which it must hold at all costs till Red's striking force has disposed of Green E. party.

The present Advance Guard will at once push on to the junction of roads $1\frac{1}{4}$ miles S.-W. of KHINA NARAI where it should arrive about dark, and, reinforced by its other half battalion from the Main Body, will be in a position to frustrate any attempt the enemy might make to cut Red's line of communication with KANIGURAM by a night march.

This force on the 3rd April will form the holding attack and will demonstrate towards KHINA NARAI and cooperate with the main attack, which will be made by Red Main Body, plus one battalion from the Rear Guard, from the direction of about MANAI NARAI, whence it can strike Green E. force in flank as it is drawn from the debouch by the holding attack.

A night march across the country between GURBAZ and MANAI NARAI is difficult, but the spur is free of obstacles and troops for the main attack must reach MANAI NARAI at daybreak

or as soon after as possible; they must therefore risk a start at 3-0 A.M. and with native guides march up the spur towards that column.

They will bivouac N. of bridge over MANAI ALGAD at GURBAZ.

This arrangement will enable O. C. Red to vary the dispositions of his main attack, and the actual position from which he strikes if necessary, according to the enemy's movements and positions. The more Green E. force advances against the holding attack, the more he will expose his right flank to Red's main attack.

Should Green E. force not be drawn through the debouch at KHINA NARAI he must be attacked where he is, the demonstration being made towards the pass, the main attack from MANAI NARAI *viâ* the Long Hill N.-E. of KHINA NARAI.

There is some danger that Green W. force may make inconveniently rapid progress against Red's containing force; the latter, however, will have a prepared position covering the crossing of the BARIALA, and the ground over which Green must advance does not offer any cover. Green's preponderance in artillery on this side is another factor against Red; but the situation is such that a risk must be taken on one flank or the other.

Should Red's plan fail, and either his containing or his striking force be driven back, or the passage W. of GURBAZ be in serious danger, there will be nothing for him but to unite the two portions of his force and retire on to the line PIRGAL-GALANI NARAI-LAKARAI NARAI.

Two officers will be sent back at once to examine this position.

O. C. at KANIGURAM will be asked to forward to KHALK KHEL and SHINGI three days' supplies and to detain the transport there in order to push the supplies further forward if necessary.

Orders for Halt By Bdr.-General X, Commanding Red Detached Force.

Gurbaz, 5-45 p.m., 2nd April 1907.

I.—A Western force of the enemy, strength 4 battalions, 8 mountain guns, and some M. I., has occupied MURSAL; an Eastern force of the enemy, strength 3 battalions, 8 mountain guns, and some M. I., is arriving at KHINA NARAI; his advanced troops have seized that place.

Our Rear Guard at WARZAKAI N., Advance Guard at MANAI KACH.

Rivers BARIALA and SHAWAL impassable except at crossing W. of GURBAZ.

II.—The detached force will bivouac to night as under:—

III.—O. C. present Rear Guard will at once despatch No. 2 Battalion to join the Main Body. He will hold a position about WARZAKAI with a detachment of sufficient strength to delay the enemy's advance on GURBAZ, and with the rest of his force, plus

1 company S. and M. he will take up and prepare a position E. of BARIALA R. about GURBAZ to defend the river crossing there. The preparation of this position will be begun at once.

His command will bivouac as here indicated.

IV.—O. C. present Advance Guard will at once call up the half battalion of No. 5 Battalion now with Main Body, and advance to junction of roads $1\frac{1}{4}$ mile S. of KHINA NARAI and bivouac there.

V.—Remainder of detached force will bivouac immediately N. of bridge over MANAI ALGAD. No. 2 Battalion will furnish pickets protecting the bivouac.

VI.—2nd Line Transport, less ammunition mules, which will join 1st Line, and Field Hospital, under escort. Two companies detailed by Officer Commanding No. 4 Battalion will halt for the night one mile S. of GURBAZ on the road following right bank of BARIALA river.

VII.—Fires cannot be lighted. Rations for 3rd instant to be carried in haversacks.

VIII.—Orders for operations to-morrow will issue later.

IX.—Officer Commanding will be at GURBAZ for the night.

(Sd.) P. Q., MAJOR,
S. O.

Dictated to Adjutants Nos. 3 and 4 Battalions.

„ „ Orderly Officer R. A.

„ „ „ „ S. and M.

„ „ Representatives of P. M. O. and C. S. and T. O.

Copies to Officer Commanding Advance and Rear Guards.

GURBAZ 6-0 P.M.:

2nd April 1907.

Operation Orders By Bdr.-General X, Commanding Red Detached Force.

Gurbaz, 9-0 p.m., 2nd April 1907.

I.—No further intelligence to hand regarding enemy.

II.—The G. O. C. intends to-morrow to contain enemy's W. force and attack his E. force.

III.—Troops as per margin will form the containing force; they will delay the enemy's advance from WARZAKAI N. and defend the crossing of BARIALA R. at GURBAZ, from a position E. of the stream. This crossing must be denied to the enemy at all costs.

IV.—Troops disposed as per margin will attack the enemy's E. force as follows:—

Col. A Comdg.
Troop 15th Cavy.
No. 1 Mtn. Batty. less
1 section.
1 Coy. S. and M.
No. 1 Battalion.

Col. B. Comdg.
Sqn. 15th Cavy. less
1 troop.
1 Section No. 1 Mtn.
Batty.
No. 5 Battalion.

Holding attack.—The force at the junction of roads $1\frac{1}{4}$ mile S. of KHINA NARAI at dawn to-morrow will demonstrate towards KHINA NARAI and co-operate with the main attack.

Main attack.—In order as per margin, will leave the bivouac at 3-0 A.M. Troops to be formed up at their respective bivouacs at 2-45 A.M. whence they will be conducted to their position in column by officers detailed by the G. O. C. This force will advance on MANAI NARAI whence to take in flank the enemy at or about KHINA NARAI.

V.—O. C. 15th Cavalry will detail $\frac{1}{2}$ troop for duty with containing force at WARZAKAI N.

VI.—Second Line Transport, except ammunition mules, and Field Hospital, under escort as per margin, will march at 5-30 A.M. to-morrow *vid* road following R. bank of BARIALA R. and LAKARAI NARAI to SHINGI.

VII.—Signalling communication will be maintained throughout the force.

VIII.—G. O. C. will be with the main attack; despatches and communications for G. O. C. should be sent to the battery of the main attack.

(Sd.) P. Q., MAJOR,
S. O.

Dictated to Adjutants Nos. 2, 3 and 4 Battalions.

" " Orderly Officer R. A. and S. and M.

" " Representative P. M. O. and C. S. and T. O.

Copies to O. C. containing force at GURBAZ.

" " O. C. force at junction road $1\frac{1}{4}$ mile S. of KHINA NARAI.

" " O. C. KANIGURAM.

" " O. C. Red Main Army.

GURBAZ, 9-15 P.M.:

2nd April 1907.

REMARKS BY ADJUDICATING OFFICER.

Thirteen solutions of the problem were received, many of these were nearly equal in merit to the winning one.

The problem has been taken from an incident in a fairly modern war and is, of course, one of keeping the enemy's two detachments separate; of containing one with the minimum force necessary while striking the other with all available strength in order to overwhelm it while isolated.

The winning solution is considered to be the one which best fulfils these principles, but there are smaller points in it which are open to criticism and in which it is excelled by other solutions.

The solver assumes that Green's objective is the line of communications of the main Red Army, this is not necessarily so; his objective may equally well be the flank or rear of the Red Army, and, in conjunction with this, the disposal of the Red containing force.

Sending back the 2nd Line Transport and Field Hospital to SHINGI, 12 miles away, seems unadvisable ; the latter will certainly be required during the fighting on the 3rd, and the former will remove available food supplies to a most inconvenient distance from the troops ; it would seem better to utilise all empty ration transport by sending it to, or towards, KANIGURAM, to refill (as has been arranged in one solution). The escort (2 companies) is also a large one considering how important every available rifle will be, in order to ensure success at the decisive point, *i.e.*, the attack of the Eastern Green Force ; this escort should be reduced to a minimum, even at some risk of the transport being insufficiently protected. Asking the O. C. KANIGURAM to send 3 days' supplies to both KHALK KHEL and SHINGI and to retain transport at both these places is rather a large order ; it would probably be all he could do to send replenishment to one point.

The early possession of the MANAI NARAI heights is important, and it would be safer to secure these at once with a detachment, for it is possible that the Eastern Green Force, recognising the importance of these heights, may push troops on to them during the night.

The possibility of the floods subsiding, or of the enemy being able to construct bridges across the SHAWAL TANGI, and consequently the necessity for early action, was not considered in most of the solutions.

In some of the orders the O. C. Force laid down the detailed order of march of a detachment, such as a Rear Guard ; this is incorrect, the O. C. detachment would arrange such details in his own orders. Verbal orders were issued in some cases, even with detachments at a distance out ; orders should always be in writing if possible ; in this case there is no reason why they should not be so.

Some of the appreciations contained what might be termed a pictorial description of the ground, without any reference as to how the ground might affect the operations of either force ; this is the important point ; a mere description of the ground is of little or no value.

The decisive attack.—The remainder of Cavalry and M. I. with one battery (three arms) to move round by KILKENNY rapidly and seize the decisive objectives. Three battalions and one battery to push rapidly to their support being diverted from say DAREHAM. The O.C. A. G. should not delegate command here to another but should assume it in person. He has a preponderance of strength at a decisive and weak point. In case of failure he is very well placed for the ensuing general action when the main forces come up.

Most candidates' orders err on the side of excessive length and detail, with a tendency to interfere with regimental commanders in their legitimate duties. This fault is all the more unjustifiable in a situation, such as given in the problem, which requires swift decision and prompt action and the issue of orders of a general nature to the commanders of the feint and the holding attacks.

TACTICAL SCHEME COMPETITION, OCTOBER 1906.

WINNING SOLUTION.

By "QUOT HOMINES TOT SENTENTIAT," CAPTAIN A. L. LONG-HURST, 2/10 GURKHA RIFLES.

GENERAL IDEA.

1. A Red (Southern) army is operating some 10 miles east of the limit of the map against a Green (Northern) army.

2. The camel road by the LARE LAR P. and KANIGURAM is one of the lines of communication of the Red army.

3. Red army has detached a force to DOTOI to contain Green forces which are to the northward of that place. This detached force is dependent on a depôt at KANIGURAM for its supply, and in order to protect its own communications is obliged to retire by WARZAKAI north to GURBAZ on the approach of two Green forces, a Western one moving southward from DAMSARE NARAI and an Eastern one moving south-west from DARIAWASTI.

4. The rivers are in flood, the BARIALA and SHAWAL streams are impassable except at the crossing west of GURBAZ.

The inhabitants, armed tribesmen, are on the whole friendly to Red, but are inclined to maraud if opportunity offers.

SPECIAL IDEA.

1. You are in command of the Red detached force, strength as per margin, and arrive with the main body at GURBAZ at 5 P.M. on April 2nd, having marched from DOTOI that morning. Your rear guard has been engaged during the day with the Western Green force which has halted near MURSAL.

Your advanced guard has been ordered to secure the KHINA NARAI.

2. At 5-30 P.M. you receive information from the advanced guard cavalry that Green troops are occupying the KHINA NARAI.

3. Reliable information gives the strength of the Western Green force as four battalions, the Eastern one as three battalions, each force eight mountain guns and a few Mounted Infantry; you also learn that the Eastern force commenced to pass HAIDAR KHEL at 11 A.M. that morning.

4. At 5-30 P.M. your force is disposed as follows:—

<i>Rear Guard.</i>	{	2 Sections Mountain Battery WAZARKAIN.	
		2 Battalions.	
		1 Mountain Battery.	GURBAZ.
		½ Co. Sappers and Miners.	
<i>Main Body.</i>	{	2½ Battalions.	
		Field Hospital.	
		2nd Line Transport of force.	

Advance Guard. { $\frac{1}{2}$ Squadron Cavalry MANAI KACH
1 Section Mountain Battery
 $\frac{1}{2}$ Battalion.

5. Required—

- (a) An appreciation of the situation with a brief description of your proposed plan.
- (b) The orders you *issue* that evening.

APPRECIATION.

The Green converging forces have, for objective, the line of communication of Red main army, *viz.*, the LARE-LAR-KANIGURAM road, to attain which they must dispose of, or avoid, Red's force. The latter they cannot count on doing, the former they cannot do with certainty, unless they unite their two forces, thus obtaining a numerical superiority over Red. Red's task is to prevent Green reaching the line of communication of his main army, and to beat Green off with such loss as to disable him, hence, as a sequent on consideration mentioned in discussing Green's objective) to prevent the junction of the two Green parties.

The alternative of retiring on to the line PIRGAL-GALANI NARAI-LAKARAI NARAI may be disregarded, as it allows the junction of Green's two forces unopposed, and gives him the initiative.

Green Eastern and Western forces have two means of uniting—by the crossing of the BARIALA at GURBAZ or by the crossing of the MAIZAR near AKHUNDAN (provided the river is passable there). The latter involving a circuit, by the force or the other, of 21 miles may be disregarded. It follows therefore that it is the crossing at GURBAZ that Green will attempt, and consequently it is this crossing that Red must deny to the enemy, which he can best do by offensive action; a passive defence of GURBAZ would involve him in a converging attack by the two parts of Green force and put out of question the chance of doing Green any appreciable damage.

It is obvious that Red, having decided on offensive action, and being superior to either Green force singly, but inferior to them united, must "contain one and strike the other," this should be facilitated by the facts that Green E. and W. forces are dependent on visual signaling for communication (if we accept the long distance of AKHUNDAN), each commander will have his own views on the situation, and concentrated action will not be easy, as the two forces have divergent lines of communication.

The consideration for Red is, shall he strike the E. force, or the W. force, or *vice versa*?

Assuming that Red's containing force cannot be less, against either Green force, than 1 battery & 2 sections Mountain Battery, he will have remaining as a striking force 4 battalions, less necessary baggage-guard, 4 sections Mountain Battery and say 1 sq. troops of cavalry.

This is about equal to Green W. force but superior to Green E. force. The terrain renders it easier to contain Green W. than Green E., as the former will have to pass the defile at WARLAKAIN and advance over open country on to another defile, *viz.*, the crossing of the BARIALA.

For reasons therefore of comparative strength and of terrain Red would contain Green W. and strike Green E. At 5-30 P.M. 1½ hours of daylight remain; though there is nearly a full moon on April 2nd, the country renders movement by night, except on the roads, most difficult, but Red can procure local guides, the inhabitants being friendly.

Dawn about 5-15 A.M.

Climate cold and bracing; but Red has just finished a march of

ERRATA.

Page 394, 11th line from bottom for "accept" read "except."

Page 396, line 2, for "column" read "col."

Page 397, line 12, for "under escort. Two" read "under escort of two."

take up a position prepared by the S. and M. covering the passage of the BARIALA at GURBAZ, which it must hold at all costs till Red's striking force has disposed of Green E. party.

The present Advance Guard will at once push on to the junction of roads 1½ miles S.-W. of KHINA NARAI where it should arrive about dark, and, reinforced by its other half battalion from the Main Body, will be in a position to frustrate any attempt the enemy might make to cut Red's line of communication with KANIGURAM by a night march.

This force on the 3rd April will form the holding attack and will demonstrate towards KHINA NARAI and cooperate with the main attack, which will be made by Red Main Body, plus one battalion from the Rear Guard, from the direction of about MANAI NARAI, whence it can strike Green E. force in flank as it is drawn from the debouch by the holding attack.

A night march across the country between GURBAZ and MANAI NARAI is difficult, but the spur is free of obstacles and troops for the main attack must reach MANAI NARAI at daybreak

or as soon after as possible; they must therefore risk a start at 3.0 A.M. and with native guides march up the spur towards that column.

They will bivouac N. of bridge over MANAI ALGAI at GURBAZ.

This arrangement will enable O. C. Red to vary the disposition of his main attack, and the actual position from which he strikes if necessary, according to the enemy's movements and positions. The more Green E. force advances against the holding attack, the more he will expose his right flank to Red's main attack.

Should Green E. force not be drawn through the debouché at KHINA NARAI he must be attacked where he is, the demonstration being made towards the pass, the main attack from MANAI NARAI via the Long Hill N.E. of KHINA NARAI.

There is some danger that Green W. force may make inconveniently rapid progress against Red's containing force, the latter however, will have a prepared position covering the crossing of the BARIALA, and the ground over which Green must advance does not offer any cover. Green's preponderance in artillery on this side is another factor against Red; but the situation is such that a trap must be taken on one flank or the other.

Should Red's plan fail, and either his containing or his striking force be driven back, or the passage W. of GUREAZ be in serious danger, there will be nothing for him but to unite the two portions of his force and retire on to the line PIRGAL GALANI NARAI LAKARAI NARAI.

Two officers will be sent back at once to examine this position.

O. C. at KANIGURAM will be asked to forward to KHALK KHEL and SHINGI three days' supplies and to detain the transport there in order to push the supplies further forward if necessary.

Orders for Halt By Bdr.-General X, Commanding Red Detached Force.

Gurbaiz, 5.45 p.m., 2nd April 1907.

I. A Western force of the enemy (strength 4 battalions & 8 mountain guns, and some M. T.) has occupied MURSAI, an Eastern force of the enemy (strength 3 battalions, 8 mountain guns, and some M. T.) is arriving at KHINA NARAI; his advanced troops have seized that place.

Our Rear Guard at WARZAKAI N. Advance Guard at MANAI KACH.

Rivers BARIALA and SHAWAL impassable except at crossing W. of GUREAZ.

II. The detached force will bivouac to night as under:—

III. O. C. present Rear Guard will at once despatch No. 2 Battalion to join the Main Body. He will hold a position N. of WARZAKAI with a detachment of sufficient strength to delay the enemy's advance on GUREAZ, and with the rest of his force, plan

1 company S. and M. he will take up and prepare a position E. of BARIALA R. about GURBAZ to defend the river crossing there. The preparation of this position will be begun at once.

His command will bivouac as here indicated.

IV.—O. C. present Advance Guard will at once call up the half battalion of No. 5 Battalion now with Main Body, and advance to junction of roads $1\frac{1}{4}$ mile S. of KHINA NARAI and bivouac there.

V.—Remainder of detached force will bivouac immediately N. of bridge over MANAI ALGAD. No. 2 Battalion will furnish piquets protecting the bivouac.

VI.—2nd Line Transport, less ammunition mules, which will join 1st Line, and Field Hospital, under escort. Two companies detailed by Officer Commanding No. 4 Battalion will halt for the night one mile S. of GURBAZ on the road following right bank of BARIALA river.

VII.—Fires cannot be lighted. Rations for 3rd instant to be carried in haversacks.

VIII.—Orders for operations to-morrow will issue later.

IX.—Officer Commanding will be at GURBAZ for the night.

(Sd.) P. Q., MAJOR,
S. O.

Dictated to Adjutants Nos. 3 and 4 Battalions.

" " Orderly Officer R. A.

" " " " S. and M.

" " Representatives of P. M. O. and C. S. and T. O.

Copies to Officer Commanding Advance and Rear Guards.

GURBAZ 6-0 P.M.:

2nd April 1907.

Operation Orders By Bdr.-General X, Commanding Red Detached Force.

Gurbaz, 9-0 p.m., 2nd April 1907.

I.—No further intelligence to hand regarding enemy.

II.—The G. O. C. intends to-morrow to contain enemy's W. force and attack his E. force.

III.—Troops as per margin will form the containing force; they will delay the enemy's advance from WARZAKAI N. and defend the crossing of BARIALA R. at GURBAZ, from a position E. of the stream. This crossing must be denied to the enemy at all costs.

IV.—Troops disposed as per margin will attack the enemy's E. force as follows:—

Holding attack.—The force at the junction of roads $1\frac{1}{4}$ mile S. of KHINA NARAI at dawn to-morrow will demonstrate towards KHINA NARAI and co-operate with the main attack.

Col. A Comdg.
1 Troop 15th Cavy.
No. 1 Mtn. Batty. less
1 section.
1 Coy. S. and M.
No. 1 Battalion.

Col. B. Comdg.
1 Sqn. 15th Cavy. less
1 troop.
1 Section No. 1 Mtn.
Batty.
No. 5 Battalion.

Main attack.—In order as per margin, will leave the bivouac at 3-0 A.M. Troops to be formed up at their respective bivouacs at 2-45 A.M. whence they will be conducted to their position in column by officers detailed by the G. O. C. This force will advance on MANAI NARAI whence to take in flank the enemy at or about KHINA NARAI.

V.—O. C. 15th Cavalry will detail $\frac{1}{2}$ troop for duty with containing force at WARZAKAI N.

VI.—Second Line Transport, except ammunition mules, and Field Hospital, under escort as per margin will march at 5-30 A.M. to-morrow *via* road following R. bank of BARIALA R. and LAKARAI NARAI to SHINGI.

VII.—Signalling communication will be maintained throughout the force.

VIII.—G. O. C. will be with the main attack; despatches and communications for G. O. C. should be sent to the battery of the main attack.

(Sd.) P. Q. MAJOR,
S. O.

Dictated to Adjutants Nos. 2, 3 and 4 Battalions.

" " Orderly Officer R. A. and S. and M.

" " Representative P. M. O. and C. S. and T. O.

Copies to O. C. containing force at GURBAZ.

" " O. C. force at junction road $\frac{1}{4}$ mile S. of KHINA NARAI.

" " O. C. KANIGURAM.

" " O. C. Red Main Army.

GURBAZ, 9-15 P.M.:

2nd April 1907.

REMARKS BY ADJUDICATING OFFICER

Thirteen solutions of the problem were received, many of these were nearly equal in merit to the winning one.

The problem has been taken from an incident in a fairly modern war and is, of course, one of keeping the enemy's two detachments separate; of containing one with the minimum force necessary while striking the other with all available strength in order to overwhelm it while isolated.

The winning solution is considered to be the one which best fulfils these principles, but there are smaller points in it which are open to criticism and in which it is excelled by other solutions.

The solver assumes that Green's objective is the line of communications of the main Red Army, this is not necessarily so, his objective may equally well be the flank or rear of the Red Army, and, in conjunction with this, the disposal of the Red containing force.

Sending back the 2nd Line Transport and Field Hospital to SHINGI, 12 miles away, seems unadvisable ; the latter will certainly be required during the fighting on the 3rd, and the former will remove available food supplies to a most inconvenient distance from the troops ; it would seem better to utilise all empty ration transport by sending it to, or towards, KANIGURAM, to refill (as has been arranged in one solution). The escort (2 companies) is also a large one considering how important every available rifle will be, in order to ensure success at the decisive point, *i.e.*, the attack of the Eastern Green Force ; this escort should be reduced to a minimum, even at some risk of the transport being insufficiently protected. Asking the O. C. KANIGURAM to send 3 days' supplies to both KHALK KHEL and SHINGI and to retain transport at both these places is rather a large order ; it would probably be all he could do to send replenishment to one point.

The early possession of the MANAI NARAI heights is important, and it would be safer to secure these at once with a detachment, for it is possible that the Eastern Green Force, recognising the importance of these heights, may push troops on to them during the night.

The possibility of the floods subsiding, or of the enemy being able to construct bridges across the SHAWAL TANGI, and consequently the necessity for early action, was not considered in most of the solutions.

In some of the orders the O. C. Force laid down the detailed order of march of a detachment, such as a Rear Guard ; this is incorrect, the O. C. detachment would arrange such details in his own orders. Verbal orders were issued in some cases, even with detachments at a distance out ; orders should always be in writing if possible ; in this case there is no reason why they should not be so.

Some of the appreciations contained what might be termed a pictorial description of the ground, without any reference as to how the ground might affect the operations of either force ; this is the important point ; a mere description of the ground is of little or no value.

TACTICAL SCHEME COMPETITION, JULY 1907.

References are to a map which will be supplied on demand.

The SHAHO River is unfordable throughout, but its affluent from the south-east and the MAHMAD River are both fordable.

The country is cut up by shallow nullahs easily passable by Infantry but forming considerable obstacles to the movement of mounted troops and transport.

GENERAL IDEA.

A Red Force of all arms is operating about "W," 25 miles N.-E. of SHAHDADPUR against a Blue Force based on "X," 75 miles due E. of that place. An inferior Red Force is at "Y" 20 miles S.-W. of SHAHDADPUR, and is contained by a Blue Force of slightly superior strength. The Red Forces are in communication *via* "Z," 30 miles W. of SHAHDADPUR. The country people are favourable to the Blues.

In the beginning of April 1907, the Red Commander at "W" sees a favourable opportunity of taking the offensive against the Blues. He therefore wishes to call to him the Red Force at "Y." The bridges over the SHAHO are still intact. He instructs the Red Commander to endeavour to join him by the evening of 7th April. On the night of 5th-6th April the Red Commander at "Y" eludes the Blue Forces by a night march.

SPECIAL IDEA.

You are in command of the Red Advanced Guard consisting of troops as per margin. At 8 A.M. your Main Guard is about 6 miles S.-W. of SHAHDADPUR near KHAN MUHAMMAD NAHJO. The Red Main Body is 2 miles in rear. The Red Commander has impressed on you the necessity of securing the passages over the SHAHO, north of SHAHDADPUR.

At this time you receive the following from one of your Cavalry patrols:—

No. 5.

BUGIANJO.

7-20 A.M.

6-4-07.

The three stone bridges and the Railway bridge over the SHAHO, north of SHAHDADPUR, are intact. No signs of enemy.

(Sd.) A. B. &c., &c.

At 8.5 A.M. you receive the following:—

No. 4.

WADADANI.

7.30 A.M.

6-4-07.

Blue Cavalry Patrol advancing N.-W. from MARAK THAIM.
Now about 2 miles east of this place.

(Sd.) C. D., &c., &c.

No. 6.

SADIK SEHTO.

7.30 A.M.

6-4-07.

From Sandhills Blue Cavalry visible near BHAN BHRANJO.
Appears to be advancing rapidly.

(Sd.) A B., &c., &c.

Q. i.—Assume a suitable formation for your Advanced Guard,
show it on the map in red and write an appreciation
of the situation.

Q. ii.—State what action you would take on receiving the
reports above mentioned. Mention precisely how your
orders would be worded or written.

Intending competitors should forward their names to the Secretary of the Institution with the sum of Re. 1, when they will receive a copy of the map to which the scheme relates, together with all instructions.

This competition will close on the 1st December 1907. Solutions received after that date will be treated as late for adjudication.

THE JOURNAL

OF THE

United Service Institution of India

Vol. XXXVI.

October 1907.

No. 169.

GOLD MEDAL PRIZE ESSAY 1907.

The use of entrenchments and field fortification in the attack, as exemplified by recent wars; together with suggestions concerning the nature, distribution and carriage of entrenching tools.

BY MAJOR E. J. M. WOOD, 99TH DECCAN INFANTRY.

MOTTO :—“ *Field Fortifications are always useful, never harmful, when they are well understood.*”

(NAPOLEON—MAXIMES DE GUERRE.)

Although there is abundant evidence from works still existent that entrenchments and field fortification were employed and their advantages thoroughly understood in the remote ages when primitive man fought with primitive weapons, it is equally evident that they were utilised solely in the defence, and their employment considered as incompatible with the freedom and activity required from the attacker.

Later on, when war had developed into a science, armies become more mobile, and weapons more accurate and long-ranging, it came to be recognised that field fortification, though a valuable and in fact indispensable adjunct to a successful defence, was nevertheless but a means to an end and that, in order that a complete success be obtained, the assumption of the offensive, at some period of the fight, on the part of the defender was essential. It was, however, a very long time before this fact was fully recognised, and defences long continued to be constructed in such a manner as to offer as great an obstacle to an advance by the defenders as to an assault by the attackers.

The advantages of the Offensive—Defensive once recognised, field fortification came to be relegated to its proper sphere, as an auxiliary only, and not the main desideratum to the successful defence of a position.

It is only in very recent times that it has begun to be recognised that field fortifications and entrenchments may likewise prove a most valuable auxiliary in the attack. The whole idea of field fortification, or what was an almost synonymous term—"field defences," seemed to negative any connection between them and the attack. Not that the value of what has been termed "aggressive fortification" has not been recognised on occasions, for it was employed as long ago as the American Civil War and the Russo-Turkish War of 1877; while in the Franco-German War, there were several instances of its use—notably at the Battle of Mars la Tour, where the Prussians in their attack, having gained possession of Vionville, promptly proceeded to entrench, and so strengthened their position in that village that, in spite of the desperate attempts of the French to retake it, it remained in their hands and formed a valuable *point d'appui*.

Thus here and there scattered examples may be found of the employment of field fortification by troops acting on the offensive, but it has been left to the South African and Russo-Japanese Wars to demonstrate that the spade is second only to the rifle in the winning of battles, and that on the modern battlefield it is almost of as great value in the attack as in the defence.

It would seem advisable before proceeding further to explain what is no doubt meant to be understood by the expression "in the attack" in the sentence which forms the subject of this essay. It has of course no reference to the deliberate attack on a fortress, or a position so strongly fortified that the attackers are compelled to sit down to a deliberate siege, as the Russians were eventually compelled to do before Plevna.

The necessity for entrenching and fortification in this kind of attack has always been recognised, and the approach, by means of trenches, redoubts and parallels, pushed gradually nearer until the time for the final assault, has been the normal procedure from the earliest times, but this species of entrenching hardly comes within what is usually known as field fortification. On the other hand, it is not restricted to the typical "attack," i.e., an advance on a defined position by an attacker culminating in an assault and bayonet charge, for it may be held to include all those various tactical movements contemplated in attacking an enemy in position, which are referred to in section 110 of Combined Training, where the best type of an offensive battle is defined as "a methodical progression from point to point, resolving itself into a series of distinct engagements each raging round a different locality and each protracted over many hours." The expression too, no doubt, is meant to include offensive action on the part of the defenders, and all the "variations in a combat which resolve themselves into attack and defence."

With regard to the selection of the "recent wars" from which to seek for examples of the use of entrenchments and field fortification in the attack, it seems superfluous to look further than those already referred to, *viz.*, the Boer and Russo-Japanese Wars. In both these campaigns rifle and cannon had reached practically to their present state of perfection as regards range, accuracy and rapidity of fires, the conditions as regards armament were therefore as nearly as possible the same as will obtain in the future, at any rate for some time.

The very extensive use of the spade by the Japanese with such good results to themselves furnishes an example such as could be obtained from no other campaign, while the many occasions during the Boer War on which we failed, owing to lack of experience to realise the value of entrenching in the attack may be held to furnish an equally valuable object-lesson.

It next remains to decide on the best method of deriving instruction from these wars as to the various uses to which, and the circumstances under which, entrenchments and field fortification may be usefully employed in the attack. It is considered that this could be best achieved by taking one by one, the different uses to which entrenching in the attack may be put, as gathered from a study of these campaigns, and illustrating each one by examples of occasions when they were actually employed with advantage, or when they might and should with equal advantage have been so employed.

In describing the various methods of employment the principle has been followed of taking them in the order in which they would usually be adopted, from the initial stages of a battle up to the final assault. No doubt some of these uses, which have been classed separately, might come under one heading and, in some cases, they naturally merge one into the other, but for the sake of clearness and illustration it seems better to keep them thus separated. They are as follows:—

The construction of entrenchments by an attacking force in anticipation of an advance to attack, either to serve as a point d'appui or upon which to fall back in case of a reverse.

Various uses of entrenchments in the attack, with examples.

A good illustration of this is furnished by the Japanese preparations prior to the action at Yushiu-lin, fought on the 31st July 1904. On the 19th July the 12th Division of the 1st Japanese Army had defeated the Russians and driven them out of their position at Chao-tao. On the night of the 20th July General Inouye, under cover of his outposts, set to work to dig a line of entrenchments about 2,000 yards beyond the Chao-tao position, and about 3,000 yards from a position at Yushiu-lin beyond which the Russians had retired, but which from its nature was unsuitable for occupation by the Japanese.

These entrenchments were made right across the valley leading from Chao-tao to Yushiu-lin, and the General's intention in making

them was doubtless—(a) to have a good *point d'appui* or starting point for an attack on the Yushu-lin position, and (b) to have good cover to rally on in case such an attack should fail, there being no natural cover anywhere in the valley, as far back as Chavotok, from guns on the Shisan Ridge (part of the Yushu-lin position).

These entrenchments had small trenches in advance of them for double sentries at night; they thus in addition afforded good protection for the outpost line, and kept back the enemy's reserve striking parties; the whole were concealed from the enemy by the kaoliang fields. The attack by the Japanese on the Russian position at Yushu-lin did not take place until the 31st of July, so the preliminary entrenching was carried out over ten days before the actual attack.

The battle of the Sha-ho furnishes another example of the use of field fortification. The Japanese had become aware that the Russian forces in front of their right, *i.e.*, that portion held by the 1st Army, were being strongly reinforced, and Marshal Oyama, divining their intention to turn his right flank, had resolved to make a counter-move against the whole Russian front as the best means of defeating the scheme.

On the 24th September the 2nd Division of the 1st Army was advanced and ordered to entrench itself along a position near of the Yentai coal-mine, with its right in the valley of Tsasan and its left near the village of Hakorishi. The trenches were elaborately prepared with head cover made by notches in the parapets, and traverses for protection from enfilade fire, while bombproof shelters constructed of logs roofed with sods were provided every few yards. In addition, positions were entrenched for the batteries, with bomb proof shelters for the detachments. These elaborate entrenchments must have taken some days to make, and there can be no doubt were constructed to form a starting point from which this Division should commence their forward movement, as well as to serve as a rallying point in the event of this forward movement being repulsed or perhaps to enable the Division to hold its ground should the Russians attack before the Division was ready itself to advance.

On both these occasions the Japanese did not hesitate to expend a tremendous amount of trouble and labour on entrenchments which might possibly never be used, but their doing so is in keeping with their careful deliberate methods throughout the campaign. As a matter of fact the Russians did make an advance towards the position on the 19th October, about a fortnight after the entrenchments had been constructed, and checked the Japanese batteries, which, however, were too well entrenched to suffer; the Russian infantry also made a show of advancing but never came within rifle range. On the night of the 19th October the 2nd Division emerged from their entrenchments and assumed the offensive.

An example of an occasion when field fortification under similar conditions, might have been employed with advantage is

furnished by the battle of Colenso in the Boer War. The attack on the Boer positions along the Tugela near Colenso had been contemplated by General Buller some time before it actually took place; the ground south of the river over which the troops were to advance to the attack was absolutely open for miles in front of the excellent cover afforded to the enemy by the kopjes and hills on the north bank. It would have been of enormous advantage to have had a line of entrenchments, with good cover for guns, constructed within about 3,000 yards of the river, under shelter of which the troops could have been concentrated at a comparatively short distance of their objective, and which, as the event showed, would have been the saving of the situation, in providing a rallying point behind which they could have retired when the unexpected strength of the Boer position was disclosed.

Here there could have been a reorganisation and reforming of the troops, after which a renewed attack could easily have been made, aided immensely by complete information of the enemy's strength and dispositions. With such a position the recovery of the abandoned guns would have been a certainty. Nor should there have been any difficulty in executing such entrenchments, for had the Boers attempted actively to interfere with the work they would have had to assume the offensive and completely disclose their own dispositions, neither of which proceedings would have at all suited their plans, while the naval guns could easily have kept down any fire from the Boer long range guns, had the latter considered it worth while to shell the working parties. The work too could have been carried on entirely at night, if it had been found necessary or desirable.

The advisability of some such preparation seems to have been impressed on General Buller by his subsequent operations against the Boers, for, prior to his final and successful advance to the relief of Ladysmith by means of an attack on the Boer positions south of the Tugela, he on the 14th February took up a position along the Hussar Hill heights with Lyttelton's Division on the right, Warren's on the left, and the mounted troops on both flanks, and entrenched. The actual advance from this position was not made until the 17th.

It is obvious that this use of field fortification would not be desirable on occasions where surprise forms the main consideration, but this does not detract from the advantages to be derived from its employment under suitable circumstances.

2. The construction of cover for artillery.

The long range and marvellous accuracy of modern artillery makes it imperative that artificial cover be provided for guns in future in the attack as well as in the defence; there can be no more trotting or galloping into action and unlimbering under the enemy's fire; such action would mean annihilation before a shot was fired. The Japanese recognised this fact at once, and it was only on very rare occasions throughout the war that their guns opened fire without first providing

shelter for the detachments; as a rule gunpits or emplacements were most carefully prepared before a shot was fired, and cover provided for everyone, officers included. This entrenching was carried out both prior to and during an attack.

(a) *Before an attack.*—The Russo-Japanese War furnished many examples of this. At the very first battle of the war the Japanese took the precaution to provide beforehand artificial cover for their artillery. On the night of the 29th April 1904 positions for their howitzers, from which the Japanese hoped great things, were very carefully prepared and thoroughly entrenched on the island of Kim-tai-to in the River Yalu, and everything possible was done to conceal them. The fire from these howitzers on the Russian position at Chiu-hien-cheng was most telling, and no doubt it was largely due to it that the Japanese infantry were able to cross bare ground and ford a bad stream in the face of fire of infantry entrenched only 800 or 1,000 yards away, while so effectively were they concealed and protected that no Russian shells fell even in their vicinity; the gunners were thus able to maintain their fire undisturbed by the enemy's shells.

Again at the action at Yushin-lin on the 31st July 1904 the Japanese prepared positions for their artillery close to the entrenched position previously referred to, but, whereas the position had been prepared days beforehand, the cover for the guns was only constructed on the night immediately preceding the attack, in order that the Russians should have no idea of their whereabouts. Here again the cover was most carefully prepared with good rear and lateral communications. The result justified the precautions, for again the Russians were unable to locate the Japanese guns, which suffered very little in consequence.

It was not always possible for positions for the Japanese guns to be prepared with so much care; at the action at Chiao-tao on the 19th April 1904 they only took up the positions assigned to them just before daybreak, but all the same they hastily entrenched before opening fire.

The occasions during the war when cover for artillery was constructed beforehand by the Japanese were numerous; it was in fact their invariable custom whenever possible to select the positions for the guns by daylight and to construct the emplacements, etc., after dark, the guns being placed in them before dawn.

This practice might have been followed with advantage more frequently than it was in the Boer War, though undoubtedly the knowledge of the numerical inferiority of the Boer artillery led to the neglect of such precautions. On one or two at least, however, the results obtained by the placing of artillery in position beforehand were such as to thoroughly recommend the practice. The occasion was Buller's attack on Buller's Pass on the 28th June. On June 6th the South African Light Horse secured Van Wyksburg, a prominent feature opposite the Pass, and after reinforcements by Coke's Brigade repulsed a bold attempt of the Boers to retake it.

That night with great difficulty some heavy guns were brought up on to the hill whence they could command the Boer position on the summit of the Pass. During the 7th June more heavy guns were placed on advanced features more or less commanding the Boer positions. It was not until June 8th when a large number of these long range guns had been got into position and were ready to open fire that the attack on the Pass commenced.

As a result of the fire of these heavy guns the Boers were unable to occupy their trenches along the crest, and the infantry were thus able to advance up the steep slopes of the mountain practically unmolested, and when they had once reached the crest the Boers made but a short fight before retiring.

The capture of the Pass would have been a very different matter had not the artillery by its fire from these carefully selected and prepared positions driven the Boers away from the crest.

(b) *During an attack.*—The great duration of many battles in the recent war, when for day after day the Japanese pushed their advance against the Russian positions, afforded many opportunities of constructing cover for artillery during the attack. In the majority of cases advantage was taken of the cover of darkness to prepare these positions, partly on account of the great difficulty of entrenching under fire, and partly that, under modern conditions, it is a highly risky proceeding to move guns from one position to another within range of the enemy's artillery, except of course the change under cover from one previously prepared position to another, and consequently the guns were not often moved in daylight.

At the battle of the Sha-Ho the Japanese began their forward move on the 10th October; resistance was stubborn, the fight for the possession of each village held by the Russians constituting a separate struggle with attack and counter-attack.

During the 12th October the 6th Division, 2nd Japanese Army, had failed to make much progress and General Oku resolved to push on under cover of night, and attack with that Division at dawn the villages of Erh-shih-chia-tsz and Hsiao-tung-tai; the 6th and 13th Regiments of Artillery were accordingly advanced after dark, took up entrenched positions whence they could effectively cover the infantry attack, and opened fire directly daylight dawned.

These guns were largely instrumental in bringing about the success of this attack.

Similarly in the case of the 3rd Division, 2nd Army. On the night of the 11th October this Division was in occupation of the village of Hsiao-chien-kou, which they had captured after severe fighting just before sunset; preparations were at once made for the advance next day, and the artillery of the Division, together with some guns previously captured from the Russians, took up positions to cover the further advance.

These positions were as usual most carefully prepared with deep trenches for the detachments as well as pits for ammunition wagons, and the guns moved into them before daylight.

TACTICAL SCHEME COMPETITION, JULY 1907.

References are to a map which will be supplied on demand.

The SHAHO River is unfordable throughout, but its affluent from the south-east and the MAHMAD River are both fordable.

The country is cut up by shallow nullahs easily passable by Infantry but forming considerable obstacles to the movement of mounted troops and transport.

GENERAL IDEA.

A Red Force of all arms is operating about "W," 25 miles N.-E. of SHAHDADPUR against a Blue Force based on "X," 75 miles due E. of that place. An inferior Red Force is at "Y" 20 miles S.-W. of SHAHDADPUR, and is contained by a Blue Force of slightly superior strength. The Red Forces are in communication *via* "Z," 30 miles W. of SHAHDADPUR. The country people are favourable to the Blues.

In the beginning of April 1907, the Red Commander at "W" sees a favourable opportunity of taking the offensive against the Blues. He therefore wishes to call to him the Red Force at "Y." The bridges over the SHAHO are still intact. He instructs the Red Commander to endeavour to join him by the evening of 7th April. On the night of 5th-6th April the Red Commander at "Y" eludes the Blue Forces by a night march.

SPECIAL IDEA.

You are in command of the Red Advanced Guard consisting of

14 Squadrons Cavalry.	troops as per margin. At 8 A.M. your
1 Company M. L.	Main Guard is about 6 miles S.-W. of
1 Battery R. H. A.	SHAHDADPUR near KHAN MU-
1 Battalion Infantry.	HAMMAD NAHJO. The Red Main
First Line Transport.	Body is 2 miles in rear. The Red Commander has impressed on you

the necessity of securing the passages over the SHAHO, north of SHAHDADPUR.

At this time you receive the following from one of your Cavalry patrols:—

No. 5.

BUGIANJO.

7-20 A.M.

6-4-07.

The three stone bridges and the Railway bridge over the SHAHO, north of SHAHDADPUR, are intact. No signs of enemy.

(Sd.) A. B. &c., &c.

At 8.5 A.M. you receive the following:—

No. 4.

WADADANI.

7.30 A.M.

6-4-07.

Blue Cavalry Patrol advancing N.-W. from MARAK THAIM.
Now about 2 miles east of this place.

(Sd.) C. D., &c., &c.

No. 6.

SADIK SEHTO.

7.30 A.M.

6-4-07.

From Sandhills Blue Cavalry visible near BHAN BHRANJO.
Appears to be advancing rapidly.

(Sd.) A. B., &c., &c.

Q. i.—Assume a suitable formation for your Advanced Guard,
show it on the map in red and write an appreciation
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BY MAJOR E. J. M. WOOD, 99TH DECCAN INFANTRY.

MOTTO :—" *Field Fortifications are always useful, never harmful, when they are well understood.*"

(NAPOLEON—MAXIMES DE GUERRE.)

Although there is abundant evidence from works still existent that entrenchments and field fortification were employed and their advantages thoroughly understood in the remote ages when primitive man fought with primitive weapons, it is equally evident that they were utilised solely in the defence, and their employment considered as incompatible with the freedom and activity required from the attacker.

Later on, when war had developed into a science, armies become more mobile, and weapons more accurate and long-ranging, it came to be recognised that field fortification, though a valuable and in fact indispensable adjunct to a successful defence, was nevertheless but a means to an end and that, in order that a complete success be obtained, the assumption of the offensive, at some period of the fight, on the part of the defender was essential. It was, however, a very long time before this fact was fully recognised, and defences long continued to be constructed in such a manner as to offer as great an obstacle to an advance by the defenders as to an assault by the attackers.

The advantages of the Offensive—Defensive once recognised, field fortification came to be relegated to its proper sphere, as an auxiliary only, and not the main desideratum to the successful defence of a position.

It is only in very recent times that it has begun to be recognised that field fortifications and entrenchments may likewise prove a most valuable auxiliary in the attack. The whole idea of field fortification, or what was an almost synonymous term—"field defences," seemed to negative any connection between them and the attack. Not that the value of what has been termed "aggressive fortification" has not been recognised on occasions, for it was employed as long ago as the American Civil War and the Russo-Turkish War of 1877; while in the Franco-German War, there were several instances of its use—notably at the Battle of Mars la Tour, where the Prussians in their attack, having gained possession of Vionville, promptly proceeded to entrench, and so strengthened their position in that village that, in spite of the desperate attempts of the French to retake it, it remained in their hands and formed a valuable *point d'appui*.

Thus here and there scattered examples may be found of the employment of field fortification by troops acting on the offensive, but it has been left to the South African and Russo-Japanese Wars to demonstrate that the spade is second only to the rifle in the winning of battles, and that on the modern battlefield it is almost of as great value in the attack as in the defence.

It would seem advisable before proceeding further to explain what is no doubt meant to be understood by the expression "in the attack" in the sentence which forms the subject of this essay. It has of course no reference to the deliberate attack on a fortress, or a position so strongly fortified that the attackers are compelled to sit down to a deliberate siege, as the Russians were eventually compelled to do before Plevna.

The necessity for entrenching and fortification in this kind of attack has always been recognised, and the approach, by means of trenches, redoubts and parallels, pushed gradually nearer until the time for the final assault, has been the normal procedure from the earliest times, but this species of entrenching hardly comes within what is usually known as field fortification. On the other hand, it is not restricted to the typical "attack," i.e., an advance on a defined position by an attacker culminating in an assault and bayonet charge, for it may be held to include all those various tactical movements contemplated in attacking an enemy in position, which are referred to in section 110 of Combined Training, where the best type of an offensive battle is defined as "a methodical progression from point to point, resolving itself into a series of distinct engagements each raging round a different locality and each protracted over many hours." The expression too, no doubt, is meant to include offensive action on the part of the defenders, and all the "variations in a combat which resolve themselves into attack and defence."

With regard to the selection of the "recent wars" from which to seek for examples of the use of entrenchments and field fortification in the attack, it seems superfluous to look further than those already referred to, *viz.*, the Boer and Russo-Japanese Wars. In both these campaigns rifle and cannon had reached practically to their present state of perfection as regards range, accuracy and rapidity of fires, the conditions as regards armament were therefore as nearly as possible the same as will obtain in the future, at any rate for some time.

The very extensive use of the spade by the Japanese with such good results to themselves furnishes an example such as could be obtained from no other campaign, while the many occasions during the Boer War on which we failed, owing to lack of experience to realise the value of entrenching in the attack may be held to furnish an equally valuable object-lesson.

It next remains to decide on the best method of deriving instruction from these wars as to the various uses to which, and the circumstances under which, entrenchments and field fortification may be usefully employed in the attack. It is considered that this could be best achieved by taking one by one, the different uses to which entrenching in the attack may be put, as gathered from a study of these campaigns, and illustrating each one by examples of occasions when they were actually employed with advantage, or when they might and should with equal advantage have been so employed.

In describing the various methods of employment the principle has been followed of taking them in the order in which they would usually be adopted, from the initial stages of a battle up to the final assault. No doubt some of these uses, which have been classed separately, might come under one heading and, in some cases, they naturally merge one into the other, but for the sake of clearness and illustration it seems better to keep them thus separated. They are as follows:—

The construction of entrenchments by an attacking force in anticipation of an advance to attack, either to serve as a point d'appui or upon which to fall back in case of a reverse.

Various uses of entrenchments in the attack, with examples.

A good illustration of this is furnished by the Japanese preparations prior to the action at Yushiu-lin, fought on the 31st July 1904. On the 19th July the 12th Division of the 1st Japanese Army had defeated the Russians and driven them out of their position at Chao-tao. On the night of the 20th July General Inouye, under cover of his outposts, set to work to dig a line of entrenchments about 2,000 yards beyond the Chao-tao position, and about 3,000 yards from a position at Yushiu-lin beyond which the Russians had retired, but which from its nature was unsuitable for occupation by the Japanese.

These entrenchments were made right across the valley leading from Chao-tao to Yushiu-lin, and the General's intention in making

them was doubtless—(a) to have a good *point d'appui* or starting point for an attack on the Yushiu-lin position, and (b) to have good cover to rally on in case such an attack should fail, there being no natural cover anywhere in the valley, as far back as Chao-tao, from guns on the Shisan Ridge (part of the Yushiu-lin position).

These entrenchments had small trenches in advance of them for double sentries at night; they thus in addition afforded good protection for the outpost line, and kept back the enemy's reconnoitring parties; the whole were concealed from the enemy by the kaoliang fields. The attack by the Japanese on the Russian position at Yushiu-lin did not take place until the 31st of July, so this preliminary entrenching was carried out over ten days before the actual attack.

The battle of the Sha-ho furnishes another example of this use of field fortification. The Japanese had become aware that the Russian forces in front of their right, *viz.*, that portion held by the 1st Army, were being strongly reinforced, and Marshal Oyama, divining their intention to turn his right flank, had resolved to make a counter-move against the whole Russian front as the best means of defeating the scheme.

On the 24th September the 2nd Division of the 1st Army was advanced and ordered to entrench itself along a position north of the Yentai coal-mine, with its right in the valley of Daisan and its left near the village of Hakoreishi. The trenches were elaborately prepared with head cover made by notches in the parapets, and traverses for protection from enfilade fire, while bombproof shelters constructed of logs roofed with sods were provided every few yards. In addition, positions were entrenched for the batteries, with bomb proof shelters for the detachments. These elaborate entrenchments must have taken some days to make, and there can be no doubt, were constructed to form a starting point from which this Division should commence their forward movement, as well as to serve as a rallying point in the event of this forward movement being repulsed, or perhaps to enable the Division to hold its ground should the Russians attack before the Division was ready itself to advance.

On both these occasions the Japanese did not hesitate to expend a tremendous amount of trouble and labour on entrenchments which might possibly never be used, but their doing so is in keeping with their careful deliberate methods throughout the campaign. As a matter of fact the Russians did make an advance towards the position on the 10th October, about a fortnight after the entrenchments had been constructed, and shelled the Japanese batteries, which, however, were too well entrenched to suffer; the Russian infantry also made a show of advancing but never came within rifle range. On the night of the 10th October the 2nd Division emerged from their trenches and assumed the offensive.

An example of an occasion when field fortification, under similar conditions, might have been employed with advantage is

furnished by the battle of Colenso in the Boer War. The attack on the Boer positions along the Tugela near Colenso had been contemplated by General Buller some time before it actually took place; the ground south of the river over which the troops were to advance to the attack was absolutely open for miles in front of the excellent cover afforded to the enemy by the kopjes and hills on the north bank. It would have been of enormous advantage to have had a line of entrenchments, with good cover for guns, constructed within about 3,000 yards of the river, under shelter of which the troops could have been concentrated at a comparatively short distance of their objective, and which, as the event showed, would have been the saving of the situation, in providing a rallying point behind which they could have retired when the unexpected strength of the Boer position was disclosed.

Here there could have been a reorganisation and reforming of the troops, after which a renewed attack could easily have been made, aided immensely by complete information of the enemy's strength and dispositions. With such a position the recovery of the abandoned guns would have been a certainty. Nor should there have been any difficulty in executing such entrenchments, for had the Boers attempted actively to interfere with the work they would have had to assume the offensive and completely disclose their own dispositions, neither of which proceedings would have at all suited their plans, while the naval guns could easily have kept down any fire from the Boer long range guns, had the latter considered it worth while to shell the working parties. The work too could have been carried on entirely at night, if it had been found necessary or desirable.

The advisability of some such preparation seems to have been impressed on General Buller by his subsequent operations against the Boers, for, prior to his final and successful advance to the relief of Ladysmith by means of an attack on the Boer positions south of the Tugela, he on the 14th February took up a position along the Hussar Hill heights with Lyttelton's Division on the right, Warren's on the left, and the mounted troops on both flanks, and entrenched. The actual advance from this position was not made until the 17th.

It is obvious that this use of field fortification would not be desirable on occasions where surprise forms the main consideration, but this does not detract from the advantages to be derived from its employment under suitable circumstances.

2. The construction of cover for artillery.

The long range and marvellous accuracy of modern artillery makes it imperative that artificial cover be provided for guns in future in the attack as well as in the defence; there can be no more trotting or galloping into action and unlimbering under the enemy's fire; such action would mean annihilation before a shot was fired. The Japanese recognised this fact at once, and it was only on very rare occasions throughout the war that their guns opened fire without first providing

shelter for the detachments; as a rule gunpits or epaulments were most carefully prepared before a shot was fired, and cover provided for everyone, officers included. This entrenching was carried out both prior to and during an attack.

(a) *Before an attack.*—The Russo-Japanese War furnishes many examples of this. At the very first battle of the war the Japanese took the precaution to provide beforehand artificial cover for their artillery. On the night of the 29th April 1904 positions for their howitzers, from which the Japanese hoped great things, were very carefully prepared and thoroughly entrenched on the island of Kin-tai-to in the River Yalu, and everything possible was done to conceal them. The fire from these howitzers on the Russian position at Chiu-lien-cheng was most telling, and no doubt it was largely due to it that the Japanese infantry were able to cross bare ground and ford a bad stream in the face of fire of infantry entrenched only 800 or 1,000 yards away, while so effectively were they concealed and protected that no Russian shells fell even in their vicinity; the gunners were thus able to maintain their fire undisturbed by the enemy's shells.

Again at the action at Yushiu-lin on the 31st July 1904 the Japanese prepared positions for their artillery close to the entrenched position previously referred to, but, whereas the position had been prepared days beforehand, the cover for the guns was only constructed on the night immediately preceding the attack, in order that the Russians should have no idea of their whereabouts. Here again the cover was most carefully prepared with good rear and lateral communications. The result justified the precautions, for again the Russians were unable to locate the Japanese guns, which suffered very little in consequence.

It was not always possible for positions for the Japanese guns to be prepared with so much care; at the action at Chao-tao on the 19th April 1904 they only took up the positions assigned to them just before daybreak, but all the same they hastily entrenched before opening fire.

The occasions during the war when cover for artillery was constructed beforehand by the Japanese were numerous, it was in fact their invariable custom whenever possible to select the positions for the guns by daylight and construct the epaulments, etc., after dark, the guns being placed in them before dawn.

This practice might have been followed with advantage more frequently than it was in the Boer War, though no doubt the knowledge of the numerical inferiority of the Boer artillery led to the neglect of such precautions. On one occasion at least, however, the results obtained by the placing of artillery in position beforehand were such as to thoroughly commend the practice. This occasion was Buller's attack on Botha's Pass on the 8th June. On June 6th the South African Light Horse seized Van Wyk's Hill, a prominent feature opposite the Pass, and after reinforcement by Coke's Brigade repulsed a bold attempt of the Boers to retake it.

That night with great difficulty some heavy guns were brought up on to the hill whence they could command the Boer position on the summit of the Pass. During the 7th June more heavy guns were placed on advanced features more or less commanding the Boer positions. It was not until June 8th when a large number of these long range guns had been got into position and were ready to open fire that the attack on the Pass commenced.

As a result of the fire of these heavy guns the Boers were unable to occupy their trenches along the crest, and the infantry were thus able to advance up the steep slopes of the mountain practically unmolested, and when they had once reached the crest the Boers made but a short fight before retiring.

The capture of the Pass would have been a very different matter had not the artillery by its fire from these carefully selected and prepared positions driven the Boers away from the crest.

(b) *During an attack.*—The great duration of many battles in the recent war, when for day after day the Japanese pushed their advance against the Russian positions, afforded many opportunities of constructing cover for artillery during the attack. In the majority of cases advantage was taken of the cover of darkness to prepare these positions, partly on account of the great difficulty of entrenching under fire, and partly that, under modern conditions, it is a highly risky proceeding to move guns from one position to another within range of the enemy's artillery, except of course the change under cover from one previously prepared position to another, and consequently the guns were not often moved in daylight.

At the battle of the Sha-Ho the Japanese began their forward move on the 10th October; resistance was stubborn, the fight for the possession of each village held by the Russians constituting a separate struggle with attack and counter-attack.

During the 12th October the 6th Division, 2nd Japanese Army, had failed to make much progress and General Oku resolved to push on under cover of night, and attack with that Division at dawn the villages of Erh-shih-chia-tsz and Hsiao-tung-tai; the 6th and 13th Regiments of Artillery were accordingly advanced after dark, took up entrenched positions whence they could effectively cover the infantry attack, and opened fire directly daylight dawned.

These guns were largely instrumental in bringing about the success of this attack.

Similarly in the case of the 3rd Division, 2nd Army. On the night of the 11th October this Division was in occupation of the village of Hsiao-chien-kou, which they had captured after severe fighting just before sunset; preparations were at once made for the advance next day, and the artillery of the Division, together with some guns previously captured from the Russians, took up positions to cover the further advance.

These positions were as usual most carefully prepared with deep trenches for the detachments as well as pits for ammunition wagons, and the guns moved into them before daylight.

The above are examples of cover for artillery constructed during the attack by night, but when compelled to advance their guns by daylight the Japanese invariably prepared cover for the detachments before opening fire.

At the battle of the Sha-ho on the 12th October the Russians were retiring at about 10-30 A.M. from the Shotatsuko valley; the Japanese artillery of the 2nd Division were too far off to do much damage so advanced; before firing a round, however, the gunners set to work to dig up cover. This caused some delay and the opportunity afforded to open fire on the excellent target offered by the retiring Russian infantry was to a certain extent wasted. Again on the same day about 4 P.M. three field batteries were moved up to a position close to the hill of Tera-yama, but did not open fire until they had spent half an hour in digging gunpits. Directly they did open fire they were located by the Russian gunners who directed rafales at them; this fire had the Japanese batteries been un-entrenched would speedily have silenced them.

At the battle of Mukden on the 2nd March the 5th Regiment of Mountain Artillery was detailed shortly after 1 P.M. to cover the attack by the 5th Japanese Division on the village of Chou-kuan-pu; it accordingly came up under cover of a village, and the gunners at once set to work making emplacements for their guns along the east side of this village. No guns were brought up until the emplacements were all completed, and fire was not opened until 2-45 P.M.

It may be maintained that this reluctance of the Japanese gunners to open fire without first entrenching was apt to lead to delay at important junctures and the loss of valuable opportunities; this was the case on the occasion above referred to; but having regard to the rapidity with which unprotected guns can be placed out of action by the fire of modern artillery, the circumstances would have to be very urgent and exceptional to justify guns disclosing their positions by opening fire before some cover had been prepared.

That the Japanese recognised that there were occasions on which cover for artillery could and should be dispensed with is shown by the fact that, after the pursuit of the Russians began on the 8th March after the battle of Mukden, the Japanese batteries did without cover, everything being sacrificed to the necessity of causing as much damage to the retreating enemy as possible, while the risks involved were of course proportionately less.

In the South African War, as has been said, the numerical inferiority of the Boer artillery rendered the elaborate preparation of cover of less importance, and guns were frequently moved from one position to another in the daytime and within range of the enemy's guns without incurring serious risk, though this did not always hold good. Experience, however, showed that the value of good cover was by no means to be ignored. During the operations on the Tugela which led to the relief of Ladysmith, Lyttelton's Division was ordered to carry out an attack on the Boer position at Monte Cristo at dawn on the 18th February. In order to provide artillery support

for this attack the guns of the 64th Battery were dragged up on to a knoll half way up the Cingolo Nek, and the gunners, aided by the Devons, spent the night in getting the guns into position and erecting emplacements for them.

The guns so placed were of the greatest value in covering the infantry attack on Monte Cristo hill.

Reference has been made to the desirability of recognising that the preparation of cover for guns must be subordinated to the necessity of not losing an opportunity of opening fire on a target which is likely to repay the risk incurred. An example of this was afforded during these same operations on the Tugela. On the 18th February the Boers, on being driven from their position on the line Green Hill—Monte Cristo, began to retreat from their position on the left bank also. Two naval guns were brought up to the top of the Monte Cristo Hill about 3 P.M. on the 19th, whence some of the retreating Boer laagers offered an excellent target; they, however waited to make epaulments before opening fire and the opportunity was thus lost.

3. The construction of entrenchments after an advance made under cover of darkness.

This method of utilising field fortification will certainly be extensively employed in future wars. It seems to be universally recognised that, in order to get within such a distance of an enemy's position as will offer some reasonable probability of an attack on such position being successful, especially in the case of a frontal attack over exposed ground, there will have to be an advance under cover of darkness followed by a vigorous offensive at daylight.

The desirability of having some cover at the point thus reached as a protection from the fire, which the enemy is sure to concentrate on the attacking force immediately daylight makes him aware of his presence and enables him to aim with accuracy, is sufficiently obvious, while trenches so constructed will afford the attackers a definite line to hold on to, from which they can resist the enemy's attempt to drive them back by counter-attack, and behind which, if their assault be repulsed, they can rally for further efforts.

The examples of this use of field fortification were very numerous in the Russo-Japanese War. In the attack by the Russians on the Motien-ling Pass on the 17th July they entrenched themselves before dawn along the wooded ridge south of the old temple, which they had reached in their night advance.

The attack by the 45th Regiment of Japanese infantry on the village of Erh-shih-chia-tsz during the battle of the Sha-ho is another conspicuous example. This Regiment formed the left of the 6th Division, 2nd Army; the village of Yang-chia-wan, distant about one mile from the above village, had been captured from the Russians about 3 P.M. on the 11th October, but attempts to advance further were unsuccessful. General Oku accordingly decided to advance after dark; the objective of the 45th Regiment was the village of

Erh-shih-chia-tsz which formed the right of the Russian position on the Shih-li-ho. The 1st Battalion of the Regiment was to work up the right bank of the Sha-ho, the other two battalions up the left bank, one battalion in the first line and one in the second.

The 2nd and 3rd Battalions moved out of Yang-chia-wan about 8 P.M., but had only gone about 600 yards when the leading battalion was fired on; it promptly halted and began to entrench on the enemy's fire ceasing; the advance was resumed, but this time the leading battalion had only advanced about another 200 yards before it was again hotly fired on, whereupon it halted and again entrenched and scouts were sent out.

The battalion managed to push on for another 150 yards, where it was within about 600 yards of the enemy's position; here a third line of trenches was dug and completed before dawn. By this means the battalion had by daylight established itself in a good entrenched position only 600 yards from their objective and with very little loss. The 1st Battalion similarly worked forward under cover of the river bed; on its reaching the stream which flows into the Sha-ho to the west of the village of Erh-shih-chia-tsz it was discovered by the enemy and fired on; it thereupon halted and dug entrenchments. On the fire slackening it again advanced in a more easterly direction for another 300 yards; here the firing line halted and set to work to dig and by daylight had completed their trenches. They were now in position on the flank of the Russians and within a comparatively short distance, and between 10 and 11 A.M. this battalion, with the other battalions of the regiment, carried the village by assault.

Had Colonel Carlton's men not been deprived of their entrenching tools by the stampeding of the mules on reaching Tohrengula Hill, or if they had had more practice in the construction of cover, the Nicholson Nek's disaster might have been avoided or minimised.

The battle of Colenso has been quoted as an instance when Method 1 of utilising field fortification in the attack might have been employed with advantage; an advance by night and the construction of entrenchments before dawn would have been of equal advantage, the advance being made from the entrenched position referred to in 1, or if this had not been prepared, from the camp.

The actual use made of this method of advance at Paardeburg is perhaps more instructive than the object lesson afforded by its omission at Colenso. The close approach to the Boer laager, which had offered so much difficulty and cost so many lives on the 18th February, was accomplished subsequently by the gradual pushing forward of entrenchments at night without loss of life. That this advance was so slow was due to the fact that it was understood that the Boers were trapped, that there was no hurry, and that casualties were not to be risked. The final advance by the Canadians affords an excellent example of this use of entrenching in the attack.

The six companies detailed for the enterprise were formed up in two lines, the first with fixed bayonets and the second carrying

picks and shovels; they were accompanied by some engineers to help in the entrenching. At 2-15 A.M. on the 27th February the companies moved forward from the point, distant about 600 yards from the Boer trenches, to which the British entrenchments had already been made. For nearly 500 yards they advanced undetected, then a furious fire was opened on them, the front line threw themselves down and opened fire, while the second set to work to dig, and for two hours continued digging covered by the fire of the other line. When dawn broke the companies were in the entrenched position within ninety yards of the enemy, and enfilading the whole of his trenches parallel to the river. The Boer surrender immediately followed.

There is little doubt that had this bold action been imitated by all the enveloping troops at a much earlier date it would have met with success, though not perhaps without incurring some losses.

4. *The construction of cover for troops covering the attack.*

It is one of the recognised principles of an attack on a position that the advance of the firing line, or portions of it, should be covered by the fire of other portions of the force. In many cases it is possible to arrange beforehand for this covering fire by some of the attacking troops from a suitable position. It is obvious that if these troops can be protected by entrenchments from the enemy's long range or artillery fire, they will be able to shoot with far greater care and accuracy than if exposed to fire in the open. This entrenching should preferably be done under cover of darkness, but it may often have to be made hastily in the daytime and even under the enemy's fire. At the battle of Liao-yang the 18th Regiment of Japanese infantry, forming part of the 3rd Division, 2nd Army, was ordered to carry out an attack on the hill known as "Rocky Ridge" situated to the east of the Shou-shan-pu Hill; the assault was to take place at dawn on the 3rd August, and the Regiment marched out at 3 A.M.; the three battalions were disposed as follows:—

1st Battalion—To cover the attack from a ridge to the east of the hill which formed the object of the attack.

2nd Battalion—Firing line and supports.

3rd Battalion—Reserve.

The 1st Battalion sent two companies to a point on the ridge, from which they could bring a fire to bear on the enemy's position on Rocky Hill, where they entrenched. Although the attack on the hill failed these companies of this covering battalion, thus entrenched on the ridge, were able to greatly assist their comrades of the other battalions, both when making their desperate attack on the hill and later when they were checked and lying in the open behind such cover as they could scrape up.

During General Buller's operations for the relief of Ladysmith, in the attack on Monte Cristo by the 2nd Brigade on the 18th February, arrangements were made for covering the advance by long range rifle fire; for this purpose some companies of the Queens and

West Yorkshires and some Maxims were placed on the northern crest of Cingolo and on the slope of the Cingolo Nek. These troops took up their positions under cover of darkness, and were able to entrench themselves before opening fire at dawn. Their fire was most effective in keeping down that of the Boers from Monte Cristo during the crossing of the open Nek by the attacking companies.

5. *The construction of entrenchments under shelter of which to form a strong firing line, and from which to bring an overwhelming musketry fire on the enemy's position prior to the assault.*

The establishment of a strong firing line in good fire positions within decisive range is one of the principles laid down for the successful carrying out of an attack on an enemy in position. The building up of this firing line is a matter of great difficulty. The Japanese endeavoured to overcome this difficulty by digging trenches at night, and massing troops in them ready to bring an overwhelming fire to bear on the enemy's position at dawn. Examples of entrenchments made under similar conditions have been quoted in Method 3. Perhaps a clearer illustration of this particular use of field fortification is furnished by the desperate efforts of the Japanese to adopt the same tactics at the battle of Mukden, when the frozen state of the ground rendered any attempt at digging almost hopeless. The 8th Division, 2nd Army, on commencing its forward movement in conjunction with the other Japanese armies on March 1st, 1904, was ordered to attack the Russians in the village of Yueh-pu-tsz, this village formed a portion of the Russian defences which they had been holding since the battle of the Sha-ho. During the night, digging being impossible, the Japanese carried up and laid down within 800 yards of the village, rows of sandbags to form a low breastwork about two feet high. Before dawn the firing line took up a position lying down behind these parapets and remained there while the artillery shelled the village. This line was hardly near enough, and the Japanese were compelled to advance from it; this they did to within about 300 yards of the village where they endeavoured to establish another line by bringing up half filled sandbags under fire, but the bags were heavy and the progress of the carriers necessarily slow, and here the casualties were heavy. Their persistent efforts were however successful, and the hot fire brought to bear on the village from the further position forced the Russians to retire, and at 2 P.M. on the 11th March the Japanese occupied Yueh-pu-tsz.

The failure of the Japanese attacks during the battle of Mukden on the Russian positions in the villages of Yang-shih-tun, Kan-kuan-tun and Sha-to-tsz on the 6th March was largely due to their inability to build up a strong firing line within decisive range of the villages owing to the impossibility of making entrenchments in the frozen ground. The attempt to make up for the inability to entrench by laying down sandbags was not so successful on this occasion.

6. *The construction of entrenchments to enable reinforcements to advance.*

This method of employing entrenchments in the attack was made use of by the Japanese during the battle of the Sha-ho; though partaking more of the nature of entrenchments used for the deliberate attack of a fortress than hasty fortifications used in the field, it was nevertheless considered by the Japanese worth the time and trouble expended and is typical of their deliberate and painstaking methods.

The occasions on which field fortification will thus be used in the attack may possibly be rare, but the necessity or the desirability for its employment may arise, and it has therefore been referred to here and an example quoted.

At the battle of the Sha-ho the 2nd Japanese Army commenced its advance on the 10th October; the Russians in their front were occupying a position south of the Shih-li-ho from the villages of Erh-tai-tsz to Wu-li-tai-tsz. Just before sunset on the 11th the enemy was driven out of both these villages and retired on to the line of the Shih-li-ho, where he held a very strong position. At 10 P.M. on the 11th the 3rd Division, 2nd Army, set to work to entrench themselves 300 yards north of Hsiao-chien-kou, a village just north of Wu-li-tai-tsz, and in order to enable them to reinforce under fire the troops holding this line of entrenchments they connected it to the village by a zigzag approach. The enemy opened fire while this was going on, but in the dark most of his shells went overhead and the Japanese did not cease their work. In addition, in order to get reinforcements up from one village to another, short trenches with a frontage of about two yards were dug at every 25 paces.

These preparations no doubt largely contributed to the successful advance next day when the Russians were driven from their position on the Shih-li-ho.

7. *The construction of entrenchments on a captured position in order to hold it, to resist counter-attack, and to form a point d'appui for a further advance:—*

This is the most usual and also the best known method of employing entrenchments in the attack, and has for a long time been recognised as a suitable opportunity for aggressive fortification. If any reference at all is made in the text-books to the use of entrenchments in the attack, it relates as a rule solely to their utility as a means of securing ground already won. This applies to the text-books of foreign countries equally with our own.

There were naturally many examples of it during the Russo-Japanese War. At the action of Yushiu-lin on the 31st July the Japanese, after capturing the Makurayama heights by a surprise in the morning and hanging on all day under fire from the Russian batteries and infantry on the Shi-san ridge and heights in the neighbourhood spent

the night in entrenching on the crest of Makurayama and constructing gunpits for their artillery, in readiness for all eventualities in the morning.

The position on the Makurayama Hill has been compared to that on Spion Kop.

At the battle of Liao-yang the 48th Regiment, forming part of the Japanese 6th Division, was told off on the 30th August to attack the village of Ku-chia-tzu, situated at the foot of the Shou-shan-pu Hill on the east side. Finding their progress checked by the fire from the village of Chiu-chia-pu-tzu on their left flank, the 1st Battalion was sent against this village and captured it at about 5 P.M. The village was at once put in a state of defence and, thanks to this precaution, a determined counter-attack by the Russians that night with the object of retaking the village, was repulsed.

At the battle of the Sha-ho the 6th Division, 2nd Japanese Army, was engaged on the 14th October in attacking the enemy in the vicinity of the Sha-ho-pu Railway station; the Russians were occupying the village of Ling-sheng-pu north of this place; at about 4 P.M. the Russians were driven out of Ling-sheng-pu after desperate fighting. At once the Japanese troops set to work to prepare the place for defence, a work which they carried out in spite of the concentrated fire of six Russian batteries. It was as well they did so, for at about 11 P.M. that night three battalions of Russian infantry made a vigorous counter-attack and nearly surrounded the village; as it was, however, they were driven back with heavy loss. At 6 A.M. next morning several Russian battalions again made a most desperate counter-attack against this village, getting quite close up under cover of a hamlet which lies adjacent to it, but were, however, again repulsed after a severe bayonet fight. A third counter-attack on the village was made about 1 P.M. but with no better success, the Russians losing heavily in all these attacks.

The Russians continued their counter-attacks on this devoted village again next day, the 16th October; no less than six times did they attempt that day to retake the village, the first being made at 6-30 A.M. and the last about 7-30 P.M., but all were repulsed. These desperate attempts to retake Ling-sheng-pu indicated the value the Russians put upon its possession.

To take another example from this battle. On the 11th October the 15th Brigade, 1st Japanese Army, was ordered to take the hill of Tera-yama, or Temple Hill as it has been called from the Chinese Temple on its summit. The attack began at 3-30 P.M.; the Russians had good cover and fought desperately. The temple itself was taken about 5-10 P.M., but it was much later before the Russians were all driven off the hill; the Japanese at once set to work to dig and during the night made excellent trenches all round the temple buildings.

They were thus enabled to repulse three separate counter-attacks on the hill made by the Russians after dark; the large number of

cartridge clips seen lying about next morning showed the severe nature of the fighting. The position so prepared served as a *point d'appui* for the further advance on the enemy's positions on the hills to the north.

In the Boer War the benefits to be derived from at once entrenching any position seized was frequently demonstrated, though the reluctance of the Boers to counter-attack did not emphasise this necessity to such an extent as would have been the case had our enemy been of a more enterprising nature.

In the operations on the Upper Tugela, as soon as the South African Light Horse had driven the Boers from Bastion Hill on January 20th they at once proceeded to entrench this important point on the flank of the Boer position. The possession of this hill enabled the hill to its right, known as Sugar Loaf Hill, also to be taken, and eventually the whole southern crest line in front of the Boer right. Here the troops entrenched and remained until their withdrawal after the failure of the Spion Kop enterprise. Had it been decided to press the attack on the right of the Boer line of entrenchments, these positions would have afforded a valuable *point d'appui* from which to advance.

Again after the capture of Vaal Krantz on the afternoon of the 5th February by the 4th Brigade steps were taken to prepare cover; had this very necessary precaution been neglected the troops would have suffered very heavily next day from the concentrated fire of the Boer guns. The Boer counter-attack on this hill on the afternoon of the 6th was beaten off.

The cover so prepared was so much improved on the evening of the 6th that the casualties from the Boer artillery fire next day were insignificant. That the possession of this important point was not eventually made use of for pushing the advance on Ladysmith in no way detracts from the value of the lesson as to the advantages of entrenching under such circumstances.

In the action of Houtnek on the 30th April to the 1st May, the troops, on getting possession of the first plateau of Toba Mountain, should have at once thrown up cover in order to maintain themselves on the position won; had they done so, the Boer counter-attack led by Colonel Maximoff, or more serious attacks had they been made, might have been beaten off more easily. The Boers still held the crest of Toba Mountain until midday on the 1st May, and had they been more enterprising would doubtless, during the night of the 30th April, have endeavoured to drive the British from the positions they had gained during the day.

At Colenso the Queens would no doubt have been able to maintain themselves in that village by putting it in a state of defence had not the situation in other parts of the battlefield necessitated their withdrawal.

An example of the desirability of mounted troops being instructed in the necessity of making cover to enable them to hold on to positions they may have seized pending the arrival of the infantry

was afforded during French's great flank march on Kimberley. His sudden appearance at Rondsdavel Drift over the Modder River on the afternoon of February 13th so surprised the small force of Boers there, that his cavalry were able to seize this drift and the line of kopjes beyond, covering both it and Klip Drift two miles upstream. The putting of these kopjes in a state of defence was of the greatest importance, for had the Boer force under Commandant Froneman, despatched by Cronje to attack the British force at the Drifts, carried out its orders and made a prompt attack that night, the outposts holding the kopjes would have had all they could do to hold their own and prevent the bivouacs being rushed and the drifts over the Modder lost. This outpost line was not taken over by the infantry until the morning of the 15th February.

Again on February 17th, when French by his forced march from Kimberley succeeded in heading off Cronje at Vendutie's Drift, his position was distinctly precarious and his object might not after all have been attained had not the cavalymen been able to turn to full advantage the cover afforded by the kopjes they had seized, and so defeated the counter-attack of the Boers from the Kodoesrand with the object of recapturing Kameelfontein.

This was also forcibly demonstrated in a small way during the Zand River operations. On the 10th May a detachment from Porter's Cavalry Brigade pushed on and seized the Vredes Verdrag kopje, an important hill in rear of the Boers' right flank. Shortly afterwards a party of the Waterburg Commando crept up under cover of a donga and made a counter-attack on the kopje. The detachment was driven in confusion down the hill and lost fourteen killed, thirty-six wounded, and two officers and twenty-seven men taken prisoners.

In the operations round Johannesburg, 28th to 29th May 1900, it fell to the mounted troops again to seize an important position, *viz.*, the ridges east of the Klip Spruit, which were taken by Alderson's and Hutton's Mounted Infantry. This ridge was like a wedge driven into the middle of the Boer position and protected the bridge at Van Wyk's Rust. The troops hung on to this position in spite of being exposed to flanking fire from the Boer guns. Here is a case where entrenching by mounted troops was most essential.

These examples demonstrate in the most practical way the necessity of at once setting to work to entrench any position taken during the attack, also that to wait for nightfall on the plea that it is impossible to entrench under fire may very possibly lead to the loss of a position, won perhaps at the cost of many lives and heavy fighting. Had the Japanese waited till dark before entrenching and putting the village of Ling-sheng-pu in a state of defence on account of their being under the concentrated fire of several Russian batteries, they would not have been ready to repulse the counter-attack by the Russians late that evening.

8. *The construction of cover to enable troops to cling to the ground they have reached, but from which they are unable to advance.*

This description of entrenching in the attack is to a certain extent included in the one just described, but, whereas that had reference to some definite position either a village, height or line of entrenchments, this refers to points where attacking troops are checked before they reach the objective.

In many cases to retire from such a point would be disastrous, not only to particular troops concerned, but perhaps to other troops engaged in the enterprise in different parts of the battlefield. Troops so situated are particularly susceptible to counter-attack; of this the enemy will be well aware, and, unless some entrenching is done and cover provided to assist them in maintaining their ground, they are likely to be driven back with heavy loss.

At the battle of Teh-li-sz on the 15th June the 3rd Division, 2nd Japanese Army, was told off to attack the left and left centre of the Russian position, while the 5th Division and a portion of the 4th were to turn the Russian right. The right of the 3rd Division, from the nature of the ground, could not receive artillery support, and could not advance against the heavy fire from the Russian trenches; the troops of the Division however clung desperately to the ground they had reached, and drove back the frequent counter-attacks made by the Russians.

They hung on until the success of the 4th and 5th Divisions on the Russian right enabled them to again advance and occupy the position.

This Division's obstinate refusal to be driven from the point it had reached was of the utmost importance to the result of the battle, for it seems that it was the Russian General's intention to counter-attack by throwing his left against the Japanese right, and there can be little doubt that the failure of the Russians to drive back the Japanese in this part of the field, even though the latter were unable to advance, entirely upset the Russian plans.

At the battle of Mukden the general advance of the Japanese armies commenced on the 1st March 1905. The Guards Division forming part of the 1st Japanese Army was pushed on the night of the 2nd March to attack the Russian positions at Tang-chia-tun, in order to assist the advance of the Yalu Army operating on the right of the 1st Army. The Russian position was, however, too formidable and too well defended to be taken by a frontal attack, and after suffering severely the Guards stopped the attack. They hung on however to the ground they had won, and, though they were unable to advance, they maintained their precarious position until the night of the 7th March when the Russians generally gave way, and the pursuit began. Throughout this period the position of the Guards Brigade was most critical, during the 4th March there was no communication between their front line, clinging

to the foot of the Russian position, and the reserves on the south side of the valley. They occupied bits of dead ground among the low hills, throwing out firing lines sheltered behind low sandbag parapets.

So close were these to the Russian trenches that the men behind them could not move hand or foot during the daytime.

The situation was only slightly relieved on the 5th March by a distribution of the 12th Division. It was their skill in making cover, and making the best use of that already existing, backed by splendid courage, which enabled these troops, in spite of the dangers and difficulties described, to hold their ground, and their stubborn maintenance of their position not only assisted the Yalu Army to advance but no doubt prevented the Russians from reinforcing their right which was being threatened by the Japanese 3rd Army.

In the attack on the Boer laager at Paardeberg on the 18th February 1900 the attacking troops, in spite of every effort, were checked in their attempts to reach the laager both on the east and west; in both cases the attack got to within about 500 or 600 yards of the Boer trenches, but, owing to the deadly fire, could not advance further in spite of the gallantry of the troops. Here was an opportunity for the employment of this method of entrenching. It was not long before dark that the last desperate attempts by the Mounted Infantry, Essex and Welsh Regiments on the east, and the Cornwalls on the west, were brought to a standstill. Directly darkness came on the troops might have at once entrenched themselves at the furthest points they had been able to reach. They would thus have been enabled to cling to the ground they had won, and have established themselves within a short distance ready for a fresh advance on the morrow. It is true that the troops had had a most exhausting day's fighting, following on even more exhausting marches without proper sleep or food, but it was the lack of training and ignorance as to the value of entrenching in such circumstances rather than lack of spirit that led to the omission of this necessary operation. It was doubtless Lord Kitchener's intention that the troops should entrench where they were, ready to renew the attack that night or early next morning, but his subordinate commanders, unused to the notion of at once making good with the spade the slightest advantage gained and knowing the exhaustion of their troops, with a few exceptions, ordered the withdrawal of their men after dark.

The action of the Gloucesters who had been ordered to drive the Boers under De Wet from the hill known as Kitchener's kopje showed an appreciation of the value of entrenching under such circumstances. They had been unable to advance beyond the foot of the hill by dusk, but promptly entrenched, and, though no fresh advance was made from this line of entrenchments that night, or till the afternoon of the next day, yet they were able by their rifle fire to keep down to a considerable extent the Boer fire from the hill during the day, and, when at last they were allowed to advance late

in the afternoon, they quickly succeeded in establishing themselves on one end of the hill. Here they again promptly entrenched, and had they not, in consonance with other plans, been ordered to retire, they would no doubt have secured the hill, the possession of which was of considerable importance that night or early next morning.

Had the Gloucesters pressed on from their entrenched position on the night of the 18th, or early morning of the 19th, they would have surprised De Wet while making desperate efforts to drag a Krupp gun and a pom-pom on to the top of the kopje and prepare emplacements for them, and might possibly have succeeded in capturing the guns as well as the hill.

After the severe fighting which attended the taking of the crest of the line of kopjes known as the Wynne Hills on February 22nd during Buller's advance on Ladysmith, the Boers, though driven from the crest, had only retired to their real line of defence further back on the hills. The British troops holding the crest could not advance and spent the night in making such cover as they could to enable them to cling to the edge of the hills: here they, their position thus strengthened, were enabled to hang on all next day (23rd) and were relieved by fresh troops that evening.

9. *The construction of slight cover by the firing line while advancing to the attack.*

Here again this use of entrenching may be considered as included to a certain extent in the above, but the method now described refers only to cover, made as a rule under fire, and while the firing line is temporarily checked, or halted pending the completion of movements by other troops working in conjunction with it. It is in this use of entrenching that the absolute necessity of the soldier, carrying an entrenching tool, and being thoroughly instructed in its use, is shown; the circumstances which necessitate this kind of cover preclude the possibility of tools being brought up either in carts or on pack animals, and the same applies to their being sent up by hand.

The necessity of the provision of some such tool will be referred to more fully below; in the meantime some examples of the many occasions during the South African and Russo-Japanese Wars when the use of this method of entrenching was found invaluable, or would undoubtedly have proved invaluable had it been employed, may be quoted.

At the battle of Liao-yang the attack by the 18th Regiment on the south-east extremity of "Rocky Hill" on the early morning of the 31st August has already been referred to; one battalion of the Regiment was detailed as a reserve, there was no cover for it, and when day broke the men were lying in the open; they however protected themselves by cover thrown up under the enemy's fire.

In the same battle in the attack by the 48th Regiment on the village of Ku-chia-tzu the advance of the 3rd Battalion, forming the firing line, was checked at about 3-30 P.M. when about 500 yards from the village on account of the heavy fire from the front and from

the village of Chiu-chia-pu-tzu on the left flank. The firing line thereupon halted and threw up cover, while another battalion of the regiment advanced against and captured the village on the flank. This cover was improved when darkness fell, and the line thus reached was held until the early morning of the 1st September in spite of several counter-attacks by the Russians.

During the battle of the Sha-Ho the Japanese 3rd Division was ordered to attack the Russians line along the Shih-li-ho, from the village of that name to that of Yin-te-niu-lu. The attack began in the early morning of the 11th October. A portion of the troops of the Division was detailed to take the village of Nan-kuan-tsz, a hamlet about 200 yards south of Yin-te-niu-lu. The Russian troops in this hamlet were however strongly reinforced and the Japanese advance was checked; the ground was perfectly open and exposed to artillery fire, but the Japanese managed to throw up slight shelter at the point they had reached, and were thus able to drive back a determined counter-attack by the Russians made at 12-30 P.M., supported by the concentrated fire of their artillery. After the repulse of this counter-attack there was a lull, during which this slight cover was improved into trenches, and ammunition brought up for the next advance which took place shortly after and the hamlet was taken.

On the 11th October the 3rd Brigade, 2nd Division Japanese Army, advanced to the attack of the Russian position on the San-joshi-san Hill. About 1-30 P.M. after a desperate encounter the Japanese occupied the low hills west of San-joshi-san, they could not push on to that position owing to the stubborn resistance offered by the Russians there, so they at once grubbed up shelter with their small entrenching tools and hung on to the ground they had won.

In the same battle on the 14th October the 6th Division, 2nd Japanese Army, was attacking the village of Lin-sheng-pu, the subsequent defence of which against the numerous counter-attacks by the Russians has been referred to above; at 12 noon on that date the troops of this Division reached about 600 yards from the village which was strongly held; here the Japanese advance was checked and cover made by them in the open under fire. A little later in the day assisted by an attack by a portion of the reserve on the Russian flank, the Japanese advance was resumed and the Russians driven out of the village at about 4 P.M.

During the battle of Mukden the frozen condition of the ground made the construction of this kind of cover almost impossible; the heavy entrenching tools of the engineering equipment were powerless to make any impression, and the light tool carried by the men was of course quite ineffective. In spite of this however the Japanese made every attempt to create cover of one sort or another, using various expedients.

The most common of these was sandbags which were distributed to the men, and, before the attack was launched, some earth was placed in them and they were carried forward so that a few inches

of cover might be obtained. Sometimes earth was thus carried forward on pieces of *tente d'abri*. In other cases the men filled their haversacks with frozen lumps of earth and placed them in front of them where they lay, and again on other occasions their packs were taken off and used as cover and were found to be of great use as a protection against shrapnel.

In the attack by the 8th Division, 2nd Army, on the village Yueh-pu-tsz on the 1st March, a breastwork of sandbags had been constructed 800 yards from the village at night; in order to advance from this line it was necessary to make some attempt to make cover between it and the village. Partially filled sandbags were accordingly carried forward by short rushes up to a point 300 yards from the village, but even when only partly filled the bags were heavy, the rushes were consequently very slow and only for short distances of 20 or 30 yards at a time, and the casualties amongst the carriers were heavy. The forward move was however made about noon and the village itself taken about 2 P.M.

Again in the attack on the village of Sha-to-tsz by the 5th Division on the 8th March, the first line of the attacking troops reached a point some 400 yards from the Russian entrenchments. Here they remained and endeavoured to make what cover they could by scraping up the ground and using the expedients referred to above. The fact that most of the killed in the attack were shot while lying down showed the value of even slight cover.

In the Boer War the actual use of entrenching of this description was rarely made, for one reason that the troops were not provided with an entrenching implement carried on the men and for another that they had not been trained in the making of cover under such circumstances. There were however many occasions when its employment would have been of the greatest value. In the action of Elandsplaagte on the 4th October the Devons, after commencing their attack on the Boer position on the hill, had to remain lying down under fire waiting for the flank attack to develop, taking advantage of what cover the ant-heaps afforded; the ant-heaps were as it happened plentiful, and being 18 inches or more in height and hard as sun-baked bricks gave good cover to those who could get behind them; but the circumstances afforded an instance of an occasion where cover hastily made with an entrenching implement would have been invaluable.

Again at the Modder River on the 28th November 1899 when the Guards and 9th Brigades were surprised by the fire suddenly opened upon them at 1,200 yards' range by the Boers concealed in the bed of the river, there was absolutely no cover. The men could do nothing but throw themselves down on their faces behind scattered ant-heaps or the low leafless scrub and attempt to reply to the fire proceeding from the dark belt of green marking the river bed. By making short rushes the 2nd Coldstreams and the Grenadiers managed to advance to within about 1,100 yards of the Boer trenches, but they could advance no further.

They held on to their ground, but in the absence of any vestige of cover they could not open fire with effect, and remained prostrate on their faces in the burning sun. Had the men been able to employ themselves in making cover the advantage would have been twofold—in the first place they would have been able after a slight delay to open fire with some confidence, and, secondly, the moral strain involved by being obliged to lie thus idle and motionless would have been eased by the effort to make cover without attracting the keen eyed enemy's unpleasant attentions.

The situation of the Highland Brigade, after the failure of the night attack on the Magersfontein trenches, was similar but worse, for the shattered remnants of the Brigade lay all along the front of the Boer trenches, in many cases at point blank range; it cannot be denied that to have made cover at such close proximity to the enemy's rifles was well nigh impossible, but men trained to use a suitable implement in the prone position might have managed it, and the effort would, as in the previous case, have served to relieve the strain on the mind.

They were not all at such close range and those who might have been able to protect themselves would have been in a better position to help their comrades by keeping up an accurate fire on the Boer trenches. The Seaforths on the right would also have had a better chance of maintaining their position had they been able to improve the slight natural cover afforded by the ridge which they had reached immediately after the disaster to the Brigade at dawn.

One more example. On the afternoon of the 21st February 1900 the troops advancing to the relief of Ladysmith began crossing the Tugela by the pontoon bridge west of Hlangwane; the 10th Brigade crossed first and occupied the kopjes covering the bridge without much opposition, but when the leading battalion advanced on to the plain beyond they came under a very heavy rifle fire from the Boers in the bed of the Onderbroek Spruit. The advance was eventually brought to a standstill, and the men had to remain lying in the open for the rest of the afternoon, exposed to heavy rifle fire at a comparatively short range. This was a situation when ordinary entrenching tools could not possibly have been pushed forward and probably could not have been used if they had, but with an entrenching tool each man could have made cover for himself where he lay, and the firing line could thus have gradually dug itself in: the cover so made could have been improved during the night, and the Boers in the Spruit would have possibly retired next morning, or in any case their fire which proved so galling to the troops engaged in seizing and holding the Wynne Hills on the 22nd would have been largely neutralised.

10. *The construction of entrenchments by troops whose assault has been repulsed, from whence to make a fresh effort or resist a counter-attack.*

Troops unless well disciplined and well led are particularly liable under these circumstances to become demoralised, and, if they

be allowed to retire unchecked too far, the retirement is only too apt to degenerate in a rout, more particularly should the enemy seize the opportunity to make a counter-attack. The desirability of halting as soon as the troops have withdrawn out of close range and hastily throwing up cover behind which the men can rally is obvious. The cover thus improvised will provide a point to limit the retirement, will assist the troops to recover their morale, and enable them to resist the almost inevitable counter-attack. The cover can be gradually improved and will prove valuable as a *point d'appui* from which a fresh effort, probably after reinforcements have been pushed up, can be made to assault the enemy's position.

At the battle of the Sha-ho use of this method of entrenching was made by the Russians. On the 11th October they began their advance to turn the Japanese right, and attacked the Umezawa Brigade in an advanced position north of the Tsu-men-tzu Ling Pass. The Russians were unable to reach their objective that day, but on the early morning of the 12th renewed the attack and assaulted the position with the bayonet. The assault was repulsed after desperate fighting, and about 2 P.M. the Russians gradually, a few at a time, began to retire, taking advantage of whatever cover there was. At about 800 yards from the position they rallied and threw up shelter trenches where they stayed. At 2 A.M. on the 13th they again made an attack which was also repulsed, ; they maintained their entrenched position throughout the 13th, but retired together with other portions of the Russian forces on the night of the 13th.

At the battle of the Sha-ho the troops of the Japanese 5th Division on the morning of the 5th March attacked the Russians holding the railway embankment in front of the villages of Sha-to-tsz and Mi-chia-pu ; after severe hand-to-hand fighting the Japanese got possession of the embankment, the Russians retiring into Mi-chia-pu and Sha-to-tsz. The Japanese hung on to the embankment until midnight on the 7th March when the large reinforcements received by the Russians in the villages indicated the probability of a vigorous counter-attack. The Japanese in their present position were not well situated to meet this, so retired to a position on some sandhills further west, where they made entrenchments. The threatened counter-attack did not come off and the Japanese again advanced on the evening of the 8th.

At Colenso it would seem that this use of entrenchments might have been made with the best results. After the general failure, owing to various causes, of the attack of the Brigades on the Boer position, it would have been quite possible, instead of retiring the troops altogether to the camp at Frere, to have withdrawn them out of rifle range and there constructed a line of entrenchments. Behind these the troops, who were in no way demoralised by their ill success, could have been reformed, their fire would have protected the deserted guns of Colonel Long's batteries, and enabled them to have been brought in after dark, while, had it been considered

desirable to renew the attack with the knowledge now acquired of the Boer position, the troops would have been much better situated for carrying it into execution. The spirit of the troops themselves and the reluctance of the Boers to leave their positions would have made the task of making such a line of entrenchments an easy one.

11. *The construction of entrenchments in the local counter-attack.*

The main counter-attack by an army, holding a defensive position, assuming the offensive does not differ materially from the attack, and the various methods of entrenching, above described, apply equally to it. Even in local counter-attacks, however, occasions may occur when it may be advisable to entrench. At the battle of the Sha-ho the Japanese 4th Division was attacking the village of Ling-sheng-pu on the 14th October, the left wing of the Division being thrown back. At 11 A.M. and again at 3 P.M. about four Russian battalions supported by artillery made a counter-attack on the Japanese left wing. Being checked in their advance at about 600 yards from the Japanese, they set to work to entrench; as, however, this work was attempted not in the prone position, the target offered to the Japanese riflemen was a good one, and the Russians in consequence suffered so severely that they broke and fled. Had they been able to maintain the position gained the taking of the important post of Ling-sheng-pu by the Japanese would have been greatly delayed.

Admitting the fact of the successful employment by the

The Japanese entrenching tool and how carried.

Japanese of entrenching in the attack under the various circumstances cited above, for it is undeniable that it is to them we must look for the most useful and valuable lessons, it at once becomes of interest to know with what kind of entrenching tools they were provided, tools put to such good use throughout the campaign. Each Japanese company (roughly 200 men) was provided with 67 light spades, 17 light picks, 5 hand axes and 5 folding saws: these tools were carried by the men themselves (the N.-C. O.'s carrying the saws). The front and rear ranks carried the tools on alternate days. In this way wherever the company might go and under whatever circumstances it might find itself, there were sure to be a certain number of entrenching tools on the spot. The spades were carried vertically, handles downwards, on the left side of the valise, the picks and axes were carried horizontally across the top of the great coat; they were fastened by string, etc., to the blue holdall when the valise was discarded. In addition to these tools each battalion (4 companies) was followed by two ponies carrying tools in light kajawahs, twenty shovels and eight picks on each pony, or forty shovels and sixteen picks per battalion. These latter were no doubt very useful for night work, but circumstances must very often occur when to bring up tools on ponies, or even by hand, to

the neighbourhood of troops engaged in the attack is absolutely impossible.

The Japanese infantry soldier was taught to look on his entrenching tools as second only in importance to his rifle; whenever he halted in the attack he endeavoured, so to speak, to go to earth and traces of their spade work could be seen whenever infantry halted in an attack. They won their way forward with their rifles, but got their grip of what they had won by means of the spade. There was no attempt to make the necessity for entrenching an excuse for not pressing on to the attack, each bit of cover thrown up, each trench made, was regarded only as a stepping stone, a footing from which to make another stride in the advance on the enemy's position. Packs were often discarded in the attack, entrenching tools never.

As to the type of work usually made that depended entirely on circumstances; when time and opportunity offered trenches of strong profile were made, usually 4 feet deep and 3 feet wide, with about 1 foot cover in front; a trench of this section was made by the Japanese infantry in three-quarters of an hour working in three reliefs, but often the only shelter was that which could be scraped up by men lying on the ground, while, as has been related, when the frozen ground forbade digging, haversacks and valises were made use of.

The Japanese batteries carried 6 spades, 3 picks, 2 axes (1 large and 1 small), 1 saw, and 1 billhook per sub-division, strapped underneath and to the sides of limbers and wagons and inside the store wagon. The good use made of these tools is evident from the examples already quoted. The Japanese engineers were frequently employed in assisting the gunners in preparing cover for the guns, approaches, etc., but the gunners were independent of the engineers, and many were the occasions when they had to rely entirely on themselves for the making of the necessary cover. The type of cover for the detachments usually consisted of pits 4 feet to 5 feet long, 3 feet wide and from 2 to 5 feet deep, a similar pit being usually made beside the ammunition wagons. As has been pointed out above the Japanese almost invariably threw up artificial cover for their artillery before coming into action; even though such cover had to be made during a fight and in daylight, the results were well worth the trouble expended.

The Japanese themselves, as a result of their experience gained in the war, came to the conclusion that it was necessary to provide still further facilities for entrenching, and accordingly in future every Japanese soldier is to be provided, when mobilised, with an entrenching tool. The number of entrenching tools per battalion carried by the pack ponies is to be increased while an attempt is to be made to render the light entrenching spade carried by the men more efficient.

The Russians have long been noted for their extensive use of entrenchments, but these have usually been employed in the defence. It has been alleged against them that in their case the rifle has been subordinated to the spade, and that they are wont to commit the error of making their tactical plans subservient to their defensive preparations. During the campaign the Russian soldier carried the Linneman entrenching tool, which is very similar to the light spade carried by the Japanese, it was worn on the right side in a case handle downwards. The proportion of tools carried was 80 Linneman spades and 20 light axes per company. The artillery was likewise provided with entrenching tools, the number of which, owing to the experience gained, was increased during the course of the war.

There is no need to describe here in detail our own system of carrying entrenching tools in the field, but, as regards India, it might be noted that hitherto the tools of a battalion of infantry, which consisted of 8 felling axes, 40 pickaxes, 40 shovels, 40 bill-hooks, 2 crowbars and 2 spoke shaves have been carried on six obligatory mules, which immediately followed the battalion. By a recent Indian Army Order the proportion of pickaxes and shovels have been increased to 48 and 160 respectively, while the number of mules has been increased to eight. This is distinctly a move in the right direction as each company thus will have its own mule carrying 6 picks and 20 shovels, and will, to that extent, be independent and self-contained.

But though a step in the right direction, this cannot be considered, judging from the lessons of these recent wars, as providing an adequate supply of tools, or a satisfactory solution of the question of their availability at all times and under all conditions. In accordance with the principle hitherto followed in the British service of making the soldier carry on his person as little as possible, a principle partly due no doubt to the fact that he has often to fight in tropical climates where to carry a heavy kit is too exhausting, and partly to the necessity of not imposing too heavy a burden on the men of a voluntary army, the carrying of an entrenching tool by the soldier himself has not been insisted on. It is possible too that until recently the necessity of his doing so was not sufficiently clearly proved. But whatever sound reasons there may be for carrying as much of the British soldier's kit for him as possible, recent wars have indubitably proved the necessity of his carrying an entrenching tool. What would have happened to the Japanese soldier time and again had his ability to make cover depended on the possibility of pack animals being pushed up into the firing line or even to the supports, the occasions were rare indeed, except at night, when this would have been possible, while even at night entrenching had often to be done under a hot fire which

would have made very precarious a supply of tools which depended on the ability to bring up pack animals. No better example of the danger of the infantry soldier being so dependent could be found than that furnished by the plight of the troops forming Colonel Carleton's column on reaching the Tchrengula Hill on its way to Nicholson's Nek for the stampede of the mules left them without the means of making any cover other than that obtainable from sangars of piled up stones; these offered ideal targets to the Boer riflemen while affording only insufficient protection to their occupants.

Foreign countries have for some time recognised the necessity of the infantry soldier carrying an entrenching tool; as has been said, both the Russian and Japanese infantry were provided with them before the war. Such tools are now carried by the French and German infantry, while only recently experiments have been carried out in the United States Army with a new pack for the infantry soldier, with which is worn, attached to the belt, a short pickaxe, a small broad axe and a shovel for entrenching.

That well-known authority, General de Négrier, has said*:—"In attack the entrenching implement has become a necessity to every infantry soldier. He should be practised in making entrenchments when lying down, gaining cover gradually in this way until he is completely hidden." While His Excellency the Commander-in-Chief in India, in his speech at the conclusion of the recent Meerut Rifle Meeting, said "The late Japanese War has shown us how impossible it is for troops to advance over exposed ground, within range of the enemy's guns and rifles, without the cover of darkness or hasty entrenchments. Hence night operations to gain advanced positions and light entrenchments thrown up thereon to enable them to be held in daylight, should form an important part of our training. Every man will, I hope, soon be supplied with a handy entrenching tool, and his life may often depend on the proficiency with which he handles it."

Backed by such weighty opinion the necessity for the provision of an entrenching tool to be carried on the infantry soldier may be considered as proved. It then only remains to decide—(a) On the best kind of tool, (b) The method of carrying it, and (c) The number to be allowed per company.

As regards (a)—The requirements of such a tool seem to be as follows:—

The requirements of an entrenching implement.

- (i) Portability.
- (ii) Strength combined with lightness.
- (iii) Suitability for the particular work required of it.
- (iv) Accessibility.

To fulfil the *first* requirement the tool must not be unwieldy in length or breadth; it must in no way interfere with the soldier's movements either when marching or doubling, or with various positions adopted when firing.

* "Some Lessons from the Russo-Japanese War." *Revue des Deux Mondes*—January, 1906.

to the foot of the Russian position, and the reserves on the east side of the valley. They occupied bits of dead ground and a few low hills, throwing out firing lines sheltered behind low sandbag parapets.

So close were these to the Russian trenches that the Russians behind them could not move hand or foot during the daytime.

The situation was only slightly relieved on the 5th March by a distribution of the 12th Division. It was their skill in seeking cover, and making the best use of that already existing, backed by splendid courage, which enabled these troops, in spite of the dangers and difficulties described, to hold their ground, and their steady maintenance of their position not only assisted the Yaku Army's advance, but no doubt prevented the Russians from rendering a counter-attack, which was being threatened by the Japanese 3rd Army.

In the attack on the Boer laager at Paardeberg on the 15th February 1900 the attacking troops, in spite of every effort, were checked in their attempts to reach the laager both on the east and west, in both cases the attack got to within about 500 yards of the Boer trenches, but, owing to the deadly fire, did not advance further in spite of the gallantry of the troops. Here was an opportunity for the employment of this method of entrenching. It was not long before dark that the last desperate attack, led by the Mounted Infantry, Essex and Welsh Regiments on the east, and the Cornwalls on the west, were brought to a standstill. In the darkness came on the troops might have at once entrenched themselves at the furthest points they had been able to reach. They would thus have been enabled to cling to the ground they had won, and have established themselves within a short time ready for a fresh advance on the morrow. It is true that the troops had had a most exhausting day's fighting, having done more exhausting marches without proper sleep or food, but it was the lack of training and ignorance as to the value of entrenching in such circumstances rather than lack of spirit that led to the failure of this necessary operation. It was doubtless Lord Kitchener's intention that the troops should entrench where they were, and renew the attack that night or early next morning. But his subordinate commanders, misled to the notion of at once making good with the spoils, the slightest advantage gained, and the consequent exhaustion of their troops, with a few exceptions, ordered the withdrawal of their men after dark.

The action of the Gloucesters who had been ordered to attack the Boers under De Wet from the hill known as Kettling's, showed an appreciation of the value of entrenching in such circumstances. They had been ordered to advance by day, in spite of the fire by dusk but promptly entrenched, and the next day a fresh advance was made from this line of entrenchments, continuing till the afternoon of the next day, yet they were able, by the use of fire to keep down to a considerable extent the Boer fire throughout during the day, and when at last they were allowed to advance, they

in the afternoon, they quickly succeeded in establishing themselves on one end of the hill. Here they again promptly entrenched, and had they not, in consonance with other plans, been ordered to retire, they would no doubt have secured the hill, the possession of which was of considerable importance that night or early next morning.

Had the Gloucesters pressed on from their entrenched position on the night of the 18th, or early morning of the 19th, they would have surprised De Wet while making desperate efforts to drag a Krupp gun and a pom-pom on to the top of the kopje and prepare emplacements for them, and might possibly have succeeded in capturing the guns as well as the hill.

After the severe fighting which attended the taking of the crest of the line of kopjes known as the Wynne Hills on February 22nd during Buller's advance on Ladysmith, the Boers, though driven from the crest, had only retired to their real line of defence further back on the hills. The British troops holding the crest could not advance and spent the night in making such cover as they could to enable them to cling to the edge of the hills: here they, their position thus strengthened, were enabled to hang on all next day (23rd) and were relieved by fresh troops that evening.

9. *The construction of slight cover by the firing line while advancing to the attack.*

Here again this use of entrenching may be considered as included to a certain extent in the above, but the method now described refers only to cover, made as a rule under fire, and while the firing line is temporarily checked, or halted pending the completion of movements by other troops working in conjunction with it. It is in this use of entrenching that the absolute necessity of the soldier, carrying an entrenching tool, and being thoroughly instructed in its use, is shown; the circumstances which necessitate this kind of cover preclude the possibility of tools being brought up either in carts or on pack animals, and the same applies to their being sent up by hand.

The necessity of the provision of some such tool will be referred to more fully below; in the meantime some examples of the many occasions during the South African and Russo-Japanese Wars when the use of this method of entrenching was found invaluable, or would undoubtedly have proved invaluable had it been employed, may be quoted.

At the battle of Liao-yang the attack by the 18th Regiment on the south-east extremity of "Rocky Hill" on the early morning of the 31st August has already been referred to; one battalion of the Regiment was detailed as a reserve, there was no cover for it, and when day broke the men were lying in the open; they however protected themselves by cover thrown up under the enemy's fire.

In the same battle in the attack by the 48th Regiment on the village of Ku-chia-tzu the advance of the 3rd Battalion, forming the firing line, was checked at about 3-30 P.M. when about 500 yards from the village on account of the heavy fire from the front and from

the village of Chiu-chia-pu-tzu on the left flank. The firing thereupon halted and threw up cover, while another battalion of the regiment advanced against and captured the village on the flank. This cover was improved when darkness fell, and the line thus reached was held until the early morning of the 1st September in spite of several counter-attacks by the Russians.

During the battle of the Sha-Ho the Japanese 3rd Division was ordered to attack the Russian line along the Sha-Ho from the village of that name to that of Yin-te-mu-lu. The attack began in the early morning of the 11th October. A portion of the troops of the Division was detailed to take the village of Nan-kan-tzu, a hamlet about 200 yards south of Yin-te-mu-lu. The Russian troops in this hamlet were however strongly reinforced and the Japanese advance was checked; the ground was perfectly open and exposed to artillery fire, but the Japanese managed to throw up slight shelter at the point they had reached, and were thus able to drive back a determined counter-attack by the Russians made at 12:30 p.m. supported by the concentrated fire of their artillery. After the repulse of this counter-attack there was a lull, during which the slight cover was improved into trenches, and ammunition brought in for the next advance which took place shortly after and the hamlet was taken.

On the 11th October the 3rd Brigade, 2nd Division, Japanese Army, advanced to the attack of the Russian position on the San-joshi-san Hill. About 1:30 p.m. after a desperate encounter the Japanese occupied the low hills west of San-joshi-san, they could not push on to that position owing to the stubborn resistance offered by the Russians there, so they at once grubbed up shelter with their small entrenching tools and hung on to the ground they had won.

In the same battle on the 14th October the 6th Division, 2nd Japanese Army, was attacking the village of Lin-sheng-pu, the subsequent defence of which against the numerous counter-attacks by the Russians has been referred to above; at 12 noon on that date the troops of this Division reached about 600 yards from the village, which was strongly held, here the Japanese advance was checked and cover made by them in the open under fire. A little later in the day assisted by an attack by a portion of the reserve on the Russian flank, the Japanese advance was resumed and the Russians driven out of the village at about 4 p.m.

During the battle of Mukden the frozen condition of the ground made the construction of this kind of cover almost impossible. The heavy entrenching tools of the engineering equipment were powerless to make any impression and the light tool carried by the troops of course quite ineffective. In spite of this however the Japanese made every attempt to create cover of one sort or another by various expedients.

The most common of these was sandbags which were piled up to the men, and, before the attack was launched sand-bags were placed in them and they were carried forward so that a line of cover

of cover might be obtained. Sometimes earth was thus carried forward on pieces of *tente d'abri*. In other cases the men filled their haversacks with frozen lumps of earth and placed them in front of them where they lay, and again on other occasions their packs were taken off and used as cover and were found to be of great use as a protection against shrapnel.

In the attack by the 8th Division, 2nd Army, on the village Yuch-pu-tsz on the 1st March, a breastwork of sandbags had been constructed 800 yards from the village at night; in order to advance from this line it was necessary to make some attempt to make cover between it and the village. Partially filled sandbags were accordingly carried forward by short rushes up to a point 300 yards from the village, but even when only partly filled the bags were heavy, the rushes were consequently very slow and only for short distances of 20 or 30 yards at a time, and the casualties amongst the carriers were heavy. The forward move was however made about noon and the village itself taken about 2 P.M.

Again in the attack on the village of Sha-to-tsz by the 5th Division on the 8th March, the first line of the attacking troops reached a point some 400 yards from the Russian entrenchments. Here they remained and endeavoured to make what cover they could by scraping up the ground and using the expedients referred to above. The fact that most of the killed in the attack were shot while lying down showed the value of even slight cover.

In the Boer War the actual use of entrenching of this description was rarely made, for one reason that the troops were not provided with an entrenching implement carried on the men and for another that they had not been trained in the making of cover under such circumstances. There were however many occasions when its employment would have been of the greatest value. In the action of Elandslaagte on the 4th October the Devons, after commencing their attack on the Boer position on the hill, had to remain lying down under fire waiting for the flank attack to develop, taking advantage of what cover the ant-heaps afforded; the ant-heaps were as it happened plentiful, and being 18 inches or more in height and hard as sun-baked bricks gave good cover to those who could get behind them; but the circumstances afforded an instance of an occasion where cover hastily made with an entrenching implement would have been invaluable.

Again at the Modder River on the 28th November 1899 when the Guards and 9th Brigades were surprised by the fire suddenly opened upon them at 1,200 yards' range by the Boers concealed in the bed of the river, there was absolutely no cover. The men could do nothing but throw themselves down on their faces behind scattered ant-heaps or the low leafless scrub and attempt to reply to the fire proceeding from the dark belt of green marking the river bed. By making short rushes the 2nd Coldstreams and the Grenadiers managed to advance to within about 1,100 yards of the Boer trenches, but they could advance no further.

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The most common of these was sandbags which were distributed to the men and, before the attack was launched some cartridges were placed in them and they were carried forward so that a few of them

They held on to their ground, but in the absence of any vestige of cover they could not open fire with effect, and remained protected on their faces in the burning sun. Had the men been able to employ themselves in making cover the advantage would have been twofold: in the first place they would have been able after a short delay to open fire with some confidence, and, secondly, the strain involved by being obliged to lie thus idle and motionless would have been eased by the effort to make cover without attracting the keen-eyed enemy's unpleasant attentions.

The situation of the Highland Brigade, after the failure of the night attack on the Magerstentem trenches, was similar but worse, for the shattered remnants of the Brigade lay all along the front of the Boer trenches, in many cases at point blank range; it cannot be denied that to have made cover at such close proximity to the enemy's rifles was well nigh impossible, but men trained to use a suitable implement in the prone position might have made it so, and the effort would, as in the previous case, have served to relieve the strain on the mind.

They were not all at such close range and those who might have been able to protect themselves would have been in a better position to help their comrades by keeping up an accurate fire on the Boer trenches. The Scots on the night would also have had a better chance of maintaining their position had they been able to improve the slight natural cover afforded by the ridge which they had reached immediately after the disaster to the Brigade at dawn.

One more example. On the afternoon of the 21st February 1900 the troops advancing to the relief of Ladysmith began crossing the Tloka by the pontoon bridge west of Hlangwani. The Highland Brigade crossed first and occupied the kopjes covering the bridge without much opposition but when the leading battalions advanced on to the plain beyond they came under a very heavy rifle fire from the Boers in the bed of the Onderbosk Spruit. The advance was eventually brought to a standstill and the men had to remain lying in the open for the rest of the afternoon exposed to heavy rifle fire at a comparatively short range. This was a situation in which ordinary trenching tools could not possibly have been pushed forward and probably could not have been used if they had been available, an entrenching tool for each man or could have made cover for those where the lay and the firing line could thus have given a great assistance in the emergency and could have been improved during the night and the Boers in the Spruit would have possessed no advantage in morning or in any case their fire would have proved so ineffective that the troops could have zigzagged along the Wyke Hills on the 22nd and would have been less greatly distressed.

10. *The effect of the attack on the Boers by the troops of the Highland Brigade on the 21st February 1900.*

The troops were well equipped and well led, but they were not able to make use of the advantages to be gained in the attack on the Boers.

be allowed to retire unchecked too far, the retirement is only too apt to degenerate in a rout, more particularly should the enemy seize the opportunity to make a counter-attack. The desirability of halting as soon as the troops have withdrawn out of close range and hastily throwing up cover behind which the men can rally is obvious. The cover thus improvised will provide a point to limit the retirement, will assist the troops to recover their morale, and enable them to resist the almost inevitable counter-attack. The cover can be gradually improved and will prove valuable as a *point d'appui* from which a fresh effort, probably after reinforcements have been pushed up, can be made to assault the enemy's position.

At the battle of the Sha-ho use of this method of entrenching was made by the Russians. On the 11th October they began their advance to turn the Japanese right, and attacked the Umezawa Brigade in an advanced position north of the Tsu-men-tzu Ling Pass. The Russians were unable to reach their objective that day, but on the early morning of the 12th renewed the attack and assaulted the position with the bayonet. The assault was repulsed after desperate fighting, and about 2 P.M. the Russians gradually, a few at a time, began to retire, taking advantage of whatever cover there was. At about 800 yards from the position they rallied and threw up shelter trenches where they stayed. At 2 A.M. on the 13th they again made an attack which was also repulsed; they maintained their entrenched position throughout the 13th, but retired together with other portions of the Russian forces on the night of the 13th.

At the battle of the Sha-ho the troops of the Japanese 5th Division on the morning of the 5th March attacked the Russians holding the railway embankment in front of the villages of Sha-to-tsz and Mi-chia-pu; after severe hand-to-hand fighting the Japanese got possession of the embankment, the Russians retiring into Mi-chia-pu and Sha-to-tsz. The Japanese hung on to the embankment until midnight on the 7th March when the large reinforcements received by the Russians in the villages indicated the probability of a vigorous counter-attack. The Japanese in their present position were not well situated to meet this, so retired to a position on some sandhills further west, where they made entrenchments. The threatened counter-attack did not come off and the Japanese again advanced on the evening of the 8th.

At Colenso it would seem that this use of entrenchments might have been made with the best results. After the general failure, owing to various causes, of the attack of the Brigades on the Boer position, it would have been quite possible, instead of retiring the troops altogether to the camp at Frere, to have withdrawn them out of rifle range and there constructed a line of entrenchments. Behind these the troops, who were in no way demoralised by their ill success, could have been reformed, their fire would have protected the deserted guns of Colonel Long's batteries, and enabled them to have been brought in after dark, while, had it been considered

desirable to renew the attack with the knowledge now acquired of the Boer position, the troops would have been much better situated for carrying it into execution. The spirit of the troops themselves and the reluctance of the Boers to leave their positions would have made the task of making such a line of entrenchments an easy one.

11. *The construction of entrenchments on the local counter-attack.*

The main counter-attack by an army, holding a defensive position, assuming the offensive does not differ materially from the attack, and the various methods of entrenching above described apply equally to it. Even in local counter-attacks, however, occasions may occur when it may be advisable to entrench. At the battle of the Sha-ho the Japanese 4th Division was attacking the village of Lang-sheng-pu on the 14th October, the left wing of the Division being thrown back. At 11 A.M. and again at 3 P.M. about four Russian battalions supported by artillery made a counter-attack on the Japanese left wing. Being checked in their advance at about 600 yards from the Japanese, they set to work to entrench, as however, this work was attempted not in the prone position, the target offered to the Japanese riflemen was a good one and the Russians in consequence suffered so severely that they broke and fled. Had they been able to maintain the position gained the taking of the important post of Lang-sheng-pu by the Japanese would have been greatly delayed.

Admitting the fact of the successful employment by the Japanese of entrenching in the attack, and the various circumstances cited above, it is undeniable that it is to them well worth looking for the most useful and valuable lessons it at once becomes of interest to know with what kind of entrenching tools they were provided, tools put to such good use throughout the campaign. Each Japanese company (roughly 200 men) was provided with 67 light spades, 17 light picks, 5 hand axes and 5 light saws; these tools were carried by the men themselves, the N.C.O.s carrying the saws. The front and rear ranks carried the tools on alternate days. In this way whenever the company might get into a position under whatever circumstances it might find itself, there were sure to be a certain number of entrenching tools on the spot. The spades were carried vertically, handles downwards, on the left side of the vaise, the picks and axes were carried horizontally across the top of the great coat, they were fastened by strings to the handle, when the vaise was disarmed. In addition to these tools each rifleman's equipment was followed by two ponies carrying ten or twelve keels, twenty shovels and eight picks on each pony, or fifty shovels and sixteen picks per battery. These latter were not of great use but for night work, but circumstances must very often occur when to bring up tools on ponies, or even by hand, is

the neighbourhood of troops engaged in the attack is absolutely impossible.

The Japanese infantry soldier was taught to look on his entrenching tools as second only in importance to his rifle; whenever he halted in the attack he endeavoured, so to speak, to go to earth and traces of their spade work could be seen whenever infantry halted in an attack. They won their way forward with their rifles, but got their grip of what they had won by means of the spade. There was no attempt to make the necessity for entrenching an excuse for not pressing on to the attack, each bit of cover thrown up, each trench made, was regarded only as a stepping stone, a footing from which to make another stride in the advance on the enemy's position. Packs were often discarded in the attack, entrenching tools never.

As to the type of work usually made that depended entirely on circumstances; when time and opportunity offered trenches of strong profile were made, usually 4 feet deep and 3 feet wide, with about 1 foot cover in front; a trench of this section was made by the Japanese infantry in three-quarters of an hour working in three reliefs, but often the only shelter was that which could be scraped up by men lying on the ground, while, as has been related, when the frozen ground forbade digging, haversacks and valises were made use of.

The Japanese batteries carried 6 spades, 3 picks, 2 axes (1 large and 1 small), 1 saw, and 1 billhook per sub-division, strapped underneath and to the sides of limbers and wagons and inside the store wagon. The good use made of these tools is evident from the examples already quoted. The Japanese engineers were frequently employed in assisting the gunners in preparing cover for the guns, approaches, etc., but the gunners were independent of the engineers, and many were the occasions when they had to rely entirely on themselves for the making of the necessary cover. The type of cover for the detachments usually consisted of pits 4 feet to 5 feet long, 3 feet wide and from 2 to 5 feet deep, a similar pit being usually made beside the ammunition wagons. As has been pointed out above the Japanese almost invariably threw up artificial cover for their artillery before coming into action; even though such cover had to be made during a fight and in daylight, the results were well worth the trouble expended.

The Japanese themselves, as a result of their experience gained in the war, came to the conclusion that it was necessary to provide still further facilities for entrenching, and accordingly in future every Japanese soldier is to be provided, when mobilised, with an entrenching tool. The number of entrenching tools per battalion carried by the pack ponies is to be increased while an attempt is to be made to render the light entrenching spade carried by the men more efficient.

The Russians have long been noted for their extensive use of entrenchments, but these have usually been employed in the defence. It has been alleged against them that in their case the rifle has been subordinated to the spade, and that they are wont to commit the error of making their tactical plans subservient to their defensive preparations. During the campaign the Russian soldier carried the Linneman entrenching tool, which is very similar to the light spade carried by the Japanese, it was worn on the right side in a case handle downwards. The proportion of tools carried was 80 Linneman spades and 20 light axes per company. The artillery was likewise provided with entrenching tools, the number of which, owing to the experience gained, was increased during the course of the war.

There is no need to describe here in detail our own system of carrying entrenching tools in the field. As regards India, it might be noted that hitherto the tools of a battalion of infantry which consisted of 8 felling axes, 40 pickaxes, 40 shovels, 40 t. hooks, 2 crowbars and 2 spoke shaves have been carried on 80 obligatory mules, which immediately followed the battalion. By a recent Indian Army Order the proportion of pickaxes and shovels have been increased to 48 and 160 respectively, while the number of mules has been increased to eight. This is distinctly a move in the right direction as each company thus will have its own mule carrying 6 picks and 20 shovels, and will, to that extent, be independent and self-contained.

But though a step in the right direction, this cannot be considered, judging from the lessons of the recent wars, as providing an adequate supply of tools or a satisfactory solution of the question of their availability at all times and under all conditions. In accordance with the principle hitherto followed in the British service of making the soldier carry on his person as little as possible, a principle partly due no doubt to the fact that he has often to fight in tropical climates where to carry a heavy kit is to exhaust and partly to the necessity of not imposing too heavy a burden on the men of a voluntary army, the carrying of an entrenching tool by the soldier himself has not been insisted on. It is possible too that until recently the necessity of this thing was not so generally clearly proved. But whatever sound reasons there may be for carrying as much of the British soldier's kit as has been possible in recent wars have undeniably proved the necessity of his carrying an entrenching tool. What would have happened to the Japanese soldier time and again had his duty to make cover depended on the possibility of pick axes and shovels being pushed up to him? The Japanese or even to the supports, the occasions were rare indeed except at night when this would have been possible, while even at night entrenching had often to be done under a hot fire which

The necessity of an entrenching implement carried on the soldier

would have made very precarious a supply of tools which depended on the ability to bring up pack animals. No better example of the danger of the infantry soldier being so dependent could be found than that furnished by the plight of the troops forming Colonel Carleton's column on reaching the Tehrengula Hill on its way to Nicholson's Nek for the stampede of the mules left them without the means of making any cover other than that obtainable from sangars of piled up stones; these offered ideal targets to the Boer riflemen while affording only insufficient protection to their occupants.

Foreign countries have for some time recognised the necessity of the infantry soldier carrying an entrenching tool; as has been said, both the Russian and Japanese infantry were provided with them before the war. Such tools are now carried by the French and German infantry, while only recently experiments have been carried out in the United States Army with a new pack for the infantry soldier, with which is worn, attached to the belt, a short pickaxe, a small broad axe and a shovel for entrenching.

That well-known authority, General de Négrier, has said*:—"In attack the entrenching implement has become a necessity to every infantry soldier. He should be practised in making entrenchments when lying down, gaining cover gradually in this way until he is completely hidden." While His Excellency the Commander-in-Chief in India, in his speech at the conclusion of the recent Meerut Rifle Meeting, said "The late Japanese War has shown us how impossible it is for troops to advance over exposed ground, within range of the enemy's guns and rifles, without the cover of darkness or hasty entrenchments. Hence night operations to gain advanced positions and light entrenchments thrown up thereon to enable them to be held in daylight, should form an important part of our training. Every man will, I hope, soon be supplied with a handy entrenching tool, and his life may often depend on the proficiency with which he handles it."

Backed by such weighty opinion the necessity for the provision of an entrenching tool to be carried on the infantry soldier may be considered as proved. It then only remains to decide—(a) On the best kind of tool, (b) The method of carrying it, and (c) The number to be allowed per company.

As regards (a)—The requirements of such a tool seem to be as follows:—

The requirements of an entrenching implement.

- (i) Portability.
- (ii) Strength combined with lightness.
- (iii) Suitability for the particular work required of it.
- (iv) Accessibility.

To fulfil the *first* requirement the tool must not be unwieldy in length or breadth; it must in no way interfere with the soldier's movements either when marching or doubling, or with various positions adopted when firing.

* "Some Lessons from the Russo-Japanese War." *Revue des Deux Mondes*—January, 1906.

To ensure the *second* it must be made of the best hardened steel, and weigh not over 3 lbs.

For the *third* it must be capable of being readily used by a man lying down, and must be such as to produce the best results in different kinds of soil.

As to the *fourth*, since the tool will often have to be used while the soldier is lying down exposed to fire, it must be within easy reach and capable of being detached and replaced with one hand while in the lying position.

The entrenching tool carried by the Japanese troops in the late war was in the form of a light shovel with light pickaxes in the proportion of about one pick to four shovels.

Although the Japanese achieved such good results with these tools they were not altogether satisfied with them, and are experimenting with a view to improve the shovel. The Russian soldiers were provided with a very similar tool, shovels and pickaxes in the same proportion. The proportion of tools to men in the former army was about two to three, and in the latter one to four.

In the German Army 400 small shovels and 40 small picks are carried by the men of an infantry battalion, which works out to about a proportion of three tools to four men.

The drawback to the above distribution of tools is that, though the shovel is undoubtedly the most useful all round tool for digging, there are many occasions when a man requires a pick, *e.g.*, to tackle a particularly hard bit of ground, to remove the earth round, or lever up a stone, etc. Now the circumstances under which these tools are utilised are often such as to preclude an interchange of tools between the men, consequently the man with a shovel must make shift to get on with his shovel, and the same the man with a pick. The intention nowadays in selecting a soldier's kit is to make him independent and, so to speak, self-contained; it is therefore obvious that, for such an important item as the entrenching tool is likely to prove in future, he should be independent of his fellows. The ordinary shovel too is from its nature not well adapted for use while lying down.

Long experience has proved that the pickaxe and shovel are the two most useful implements for digging, and having regard to the above remarks, it is obvious that it is a combination of these two in one useful tool that is required.

This desideratum has been recognised before and was endeavoured to be met by the introduction of the Wallace patent entrenching tool; the drawback to this implement was that, when using the pick or grubber, the blade of the shovel was apt to cut the arm, and it was also not wholly suitable for use by men lying down.

The tool described below would, it is believed, fulfil all the above requirements, it being borne in mind that the intention is that such a tool is not intended to do away with the necessity for the ordinary entrenching tools accompanying troops, but for use

Description of an implement suggested.

under circumstances when these latter are not available, and could not be used if they were.

The accompanying rough sketch will explain the nature of the implement, and gives its dimensions. The particular points in its favour are:—

- (i) It combines the two descriptions of tool essential for entrenching.
- (ii) It is particularly adapted for use by men lying down, and can, if necessary, be worked with one hand.
- (iii) It can be worn attached to the belt without in any way interfering with the wearer's movements.
- (iv) It can easily be detached for use by the wearer when lying down and equally easily refastened.

The swelling of the handle midway between the two ends should afford an easy grip and reduce the liability to blister and cramp; the length of this portion is such as to admit of its being grasped with two hands, one above the other, whichever end of implement is being used. What usually forms the "treads" of the spade, not being required in an implement of this sort, are slightly sloped so as to obviate the possibility of the user's hands being cut or bruised by the edges when using the spade portion. For comfort in use the handle is covered with leather.

As regards (b)—The intention is that the tool should be carried suspended from the waist belt, on the opposite side to the bayonet, in the manner here described:—The point of the pick fits into a pocket of stout sole leather, connected with a leather loop, to slip on the belt, by a stout leather strap about an inch and a half wide lying along the back of the handle of the implement, the weight of the implement being thus borne by the loop.

To the loop is also sewn a leather flap of such a size that, when folded over, it will form a cover, for the spade portion of the implement. A small strap is sewn through the lower part of the flap to the loop; this strap is passed round the handle of the implement and fastened to a stud sewn on to the folded-over portion of the flap, and in this way secures both the flap and implement. Thus by one movement the flap can be opened and the retaining strap released.

The hollow of the shovel and the curve of the pick are made to face in opposite directions, in order that the former may sit more comfortably under the wearer's arm and the latter turn outwards from his leg.

Now with regard to (c)—There should be no doubt whatever as to the necessity of every infantryman carrying a tool. There were many occasions

during the Russo-Japanese and Boer Wars when the situation was such that, unless a man was himself carrying a tool, he must and did go without; such occasions are instanced in Nos. 8 and 9 of the various uses of entrenchments in the attack quoted above. This fact has been recognised by the Japanese authorities and

Manner of carrying the implement.

Distribution.

arrangements are being made accordingly. It should, however, be clearly understood that the arrangements for carrying tools, as recently laid down, should not be interfered with in consequence or the number of tools per battalion decreased.

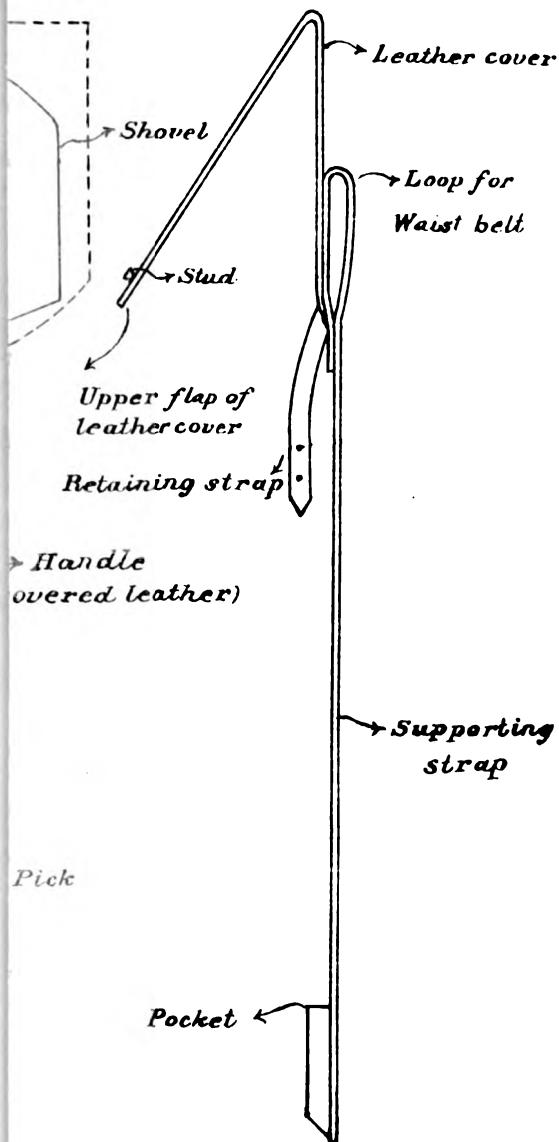
The soldier should be thoroughly practised in the use of his entrenching implement under the various circumstances in which it would be utilised on service; he should be taught to regard it as second only to his rifle in importance, and that as Lord Kitchener said, "his life may often depend on the proficiency with which he handles it." At the same time it should be impressed upon him that, to quote Lord Kitchener again, "such artificial cover (as is intended to be made with the implement) should be entirely distinct from entrenchments made to defend a position when time is available and more efficient tools can be used," and that the implement should be reserved for such.

One more point seems to require notice and that is the great difficulty experienced during the battle of Mukden by the Japanese in making use of entrenchments during the attack, owing to the frozen state of the ground. Allusion has already been made to the various expedients resorted to by them to overcome this serious difficulty, the most important and successful of which was the issue to the infantry and artillery of sandbags. The use of sandbags, however, will not be limited to occasions when the frozen condition of the ground prohibits the digging of entrenchments; many will be the occasions when the rocky nature of the soil will be as prohibitive of entrenching as though it were frozen, in any case as far as deep entrenching is concerned. Here the sandbag will prove equally indispensable.

The troops sent up to occupy Spion Kop were plentifully supplied with entrenching tools, and engineers to guide and assist, but on the mountain top the solid rock was covered by but a shallow layer of earth, and the trenches could not be deepened. Here sandbags would have been invaluable for there was ample earth on the surface to fill them, and they would have provided the necessary depth of cover, which could not be obtained by digging down; they would also have been most useful for improving the natural cover provided by the rocks. Sandbags, however, formed no portion of the entrenching equipment of regiments, and, though it is said they were to have been issued, the fact remains that they were not. Under General Warren's orders several thousand sandbags were sent to be distributed among the troops that were being sent up to reinforce those on the summit, but the circumstances, *viz.*, broad daylight and a withering fire concentrated on the hill were such as to prevent effective use being made of them. The nature of the country in which our forces in India may have one day to operate is likely to provide both frozen and rocky soils, it seems therefore a reasonable suggestion that when circumstances are likely to necessitate their use, sandbags should be

The implement not meant to supersede the ordinary tool.

The issue of sandbags for use when the ground is rocky or frozen.



PLEMENT. LEATHER CARRIER

(SIDE VIEW)

Size.

h 7 inches; width 6 inches.

7 inches.

h 9 inches; width 2 inches (at bulge)

issued to infantry and artillery, every man of the former being supplied with one, if not two ; these could easily be carried rolled up, while a certain number should always form part of the equipment of the pack mules carrying the entrenching tools.

There are not wanting those who maintain that digging is now being rather overdone, that the main object of the attacker, *viz.*, to drive the enemy from his position with as much loss to him as possible is apt to be lost sight of, and that it will be difficult to get troops to advance once they have got under good cover. Such arguments show either that the proper use of entrenchments in the attack has not been thoroughly understood, or that the training or morale of the troops is deficient. It must always be remembered that in the attack, equally as in the defence, entrenchments and field fortification must be regarded as but the means to an end.

As the Alpine climber, when cutting footholds in the ice with his axe, or supporting himself with his alpenstock, is bent only on reaching the summit of the mountain, using such aids merely to enable him to cling to the height he has reached and to provide a footing from which to climb higher, so must the use of entrenching be regarded by the attacker, *i.e.*, solely as a means of enabling him to reach his goal—the enemy's position.

FINANCING THE SILLADAR CAVALRY.

BY MAJOR F. M. EDWARDS, 33RD Q. O. LIGHT CAVALRY.

In the *Journal of the United Service Institution of India* for October 1906, there appears an article which compares the Silladar and Non-Silladar systems and which makes certain suggestions for amalgamating them, so as to obtain the advantages of each without their disadvantages.

The writer of the above article, speaking of the Silladar system, says, "the principle disadvantages are:—

- (1) *The Horse Question*.—Namely, the difficulty Commanding Officers have, with the increased cost of remounts, of being able to mount their men efficiently and well.
- (2) *The Recruit Question*.—The difficulty experienced in some regiments in getting recruits with sufficient money to meet the demands of the 'Assami' as now required by regiments."

Now, as a matter of fact, these difficulties undoubtedly exist, but in some regiments means have been found to overcome them. The Silladar system, although it is run on the same general lines in all regiments, varies very considerably as regards its practical application. Some regiments work on sound financial lines and others do not, consequently some are in more or less affluent circumstances and some almost insolvent.

Neither the horse difficulty nor the recruit difficulty are insuperable; it is the working out of the details of the system which is in fault.

There is no reason whatever why a Silladar regiment should not be able to afford 24,000 Rs. per annum for the purchase of remounts (60 at 400 Rs. each) if the Horse Fund is run on sound lines.

The income of the Horse Fund should consist of—

- (a) Subscriptions.
- (b) Sale of casters.
- (c) Interest on outstanding money, i.e., on the unpaid balance of the Horse Price.

The rate of the subscription must of course be fairly high, which is quite feasible as will be explained hereafter.

Let the subscription be	Rs.	3 per mensem
then $621 \times 3 \times 12 =$	„	22,356 per annum.
60 casters at 50 Rs. each =	„	3,000 „ „

Interest at $6\frac{1}{4}$ per cent, on the outstanding balances of the horse price, will naturally vary according to the figure at which the horse price is fixed and the amount of the deposit which the recruit makes on enlistment ...	}	„ X „ „
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The income of the Horse Fund should be Rs. 25,356 per annum plus interest, *i.e.*, X.

The higher the horse price and the smaller the amount deposited on enlistment, the larger will be the amount of interest, and consequently, the better off will be the Horse Fund.

In order to bring Horse Funds into a more flourishing condition two things are necessary:—

- (1) To fix the horse price at a fairly high figure.
- (2) To reduce the amount of the deposit required from a recruit on enlistment.

I would suggest that the horse price be fixed at Rs. 400. The low figure at which the horse price is fixed in most regiments is one of the reasons which account for the difficulty experienced in mounting themselves. On taking his discharge the Silladar takes away with him the full amount of the horse price, but during his service the regiment has the use of the money. In a case where the Silladar pays up the whole of the horse price on joining, the regiment can only benefit to a small extent, as the money is probably included in the floating balance at the bank at, say, 2 per cent interest.

If the horse price is Rs. 400, the regiment gets interest on that amount at 2 per cent, if it is Rs. 250 the regiment gets the bank rate on Rs. 250 only. But in the majority of cases the horse price is not paid up in full, and so the regiment gets $6\frac{1}{4}$ per cent on the outstanding amount as well as 2 per cent on the paid up deposit. Therefore the higher the horse price, the more interest will be obtained, and, if we look upon the Silladar system as being a Provident Fund (from the point of view of the sowar), the more money the Silladar puts by during his service, the better off will he be when he retires from the service.

It should be the aim of every Commanding Officer to reduce the amount of the deposit required from recruits on joining, as far as possible. How far it may be possible depends of course on the state of the funds at his disposal. If the horse price is Rs. 400 and a deposit of Rs. 200 is demanded, the regiment will make $6\frac{1}{4}$ per cent on Rs. 200 (the outstanding balance) and 2 per cent on the paid up deposit, but if the deposit is only Rs. 50 the regiment will make $6\frac{1}{4}$ per cent on Rs. 350 and 2 per cent on Rs. 50.

The above proposal in reality amounts to nothing more or less than that the regiment should lend the horse price to the recruit, to be refunded by monthly instalments, the interest on the loan at $6\frac{1}{4}$ per cent being recovered after the loan is paid up in full.

If we take an average of, say, 50 recruits per regiment per annum, the amount of capital required will work out as under—

Basis of calculation.

Horse price	= Rs.	400
Deposit towards Assami	= „	50
Half share of pony price	= „	25
Balance to be recovered	= „	375
50 (recruits) × 375	= „	18,750 per annum.

If Rs. 3 per mensem is recovered from each man for the first 6 years and then, when he is in receipt of his second G. C. stripe, Rs. 4 per mensem, and Rs. 5 per mensem after he has paid his deposit of $1\frac{1}{2}$ months' pay to the Regimental Fund, the loan will be fully recovered in 9 years 4 months and the interest in 1 year 5 months, total 10 years 9 months.

Therefore $18,750 \times 9\frac{1}{2} = \text{Rs. } 175,000$, represents the total maximum outlay, as at the end of $9\frac{1}{2}$ years the first year's loan will have been recovered, and at the end of $10\frac{1}{2}$ years the second year's loan would have been recovered, and so on. In practice, as some few recruits might prefer to deposit a larger sum on joining, the whole of the above-mentioned sum would probably not be required. After the ninth year the Horse Fund would commence to receive interest on the loan at $6\frac{1}{2}$ per cent for the whole period, a rate of interest which it could not get elsewhere, and yet the money would be perfectly safe as it would actually be in the hands of the regiment itself.

By adopting the above proposal the *actual* loss of ready money for the first nine years will be represented by the difference between the proposed deposit (Rs. 50) and the present deposit, multiplied by the number of recruits, plus interest at, say, 2 per cent on the above sum. The loss is only a loss of ready money, as the outstandings will be increased. Under para. 228, A.R.I., Vol. III, each regiment can borrow Rs. 25,000 from Government at 4 per cent for the purpose of assisting recruits to pay for their Assamis. This concession should help regiments to tide over the first nine years, though, as will be shown later, it is not enough for the purpose for which it is intended.

It will no doubt be urged that the above scale of subscriptions and system of financing the Horse Fund would be too hard on the Silladar and would stop enlistment, but in practice it has been found to work well, both in the interests of the Silladar and the regiment. The men under this system are no worse off than they are in regiments which do not work on these lines. The reason is this: it is true that nowadays the average recruit for Native Cavalry has little or no money of his own and he consequently has to borrow the amount which he has to deposit on joining, from the *bunnia*, generally at 24 per cent interest. He therefore has to pay two or three rupees a month to the *bunnia* towards liquidating his debt, in addition to his monthly subscription to the Horse Fund and instalment towards the horse price. If, on the other hand, a recruit is enlisted without being called upon to make a deposit, he is at once a gainer of two or three rupees a month and, being free of debt to the *bunnia*, he is in a position to pay a higher subscription to the Horse Fund than he could otherwise afford. The regiment also gains *in the long run*, because it gets interest on a larger sum of money. As the regiment does not recover the interest on the horse price until the latter is paid up in full, the Silladar is by that time in receipt of G. C. pay, and possibly also of other allowances, consequently he is not inconvenienced by having to pay interest to anything like the same extent as he would be if he had to repay the *bunnia* directly after enlistment.

As a matter of fact, however, few regiments are in a sufficiently flourishing condition, as regards funds, to be able to carry out the above arrangement in its entirety, but some regiments do take smaller deposits than others, and some have a higher horse price and higher subscriptions than others.

It requires considerable funds to enable a regiment to lend Rs. 375 to each recruit, but this is the point at which Government should step in to assist. As has been previously pointed out, Government lends regiments up to Rs. 25,000 at 4 per cent for the purpose of assisting recruits in the purchase of their Assamis, but it is insufficient for the purpose. A sum of Rs. 67,500 per regiment, lent on the same terms, would enable the funds of Silladar Cavalry to right themselves. The above sum has been arrived at as under:—

- (a) The recruit, if enlisted as a Silladar, to deposit Rs. 50.
- (b) Government to lend each recruit Rs. 150 so as to make up the deposit to Rs. 200 per recruit.
- (c) The regiment to lend the balance of the Assami money to the recruit at $6\frac{1}{4}$ per cent interest, as is done at present in regiments.

Fifty recruits per annum at Rs. 150 each = Rs. 7,500 per annum per regiment, but, as the regiment would have recovered the whole of the horse and pony price from the first batch of 50 recruits in the ninth year, the above sum (Rs. 7,500) would only be required from Government for nine years, *i. e.*, $\text{Rs. } 7,500 \times 9 = 67,500$ which represents the maximum advance to each regiment.

Thirty-five Silladar regiments at Rs. 67,500 each = Rs. 23,62,500, a sum which would be distributed over nine years, and which would bear interest at 4 per cent.

The cost to Government of the above proposal would be insignificant compared to the initial cost of converting Silladar regiments into Non-Silladars.

Regiments would benefit by having sufficient ready money to cover current expenses, and, by remodelling their system of finance on the lines indicated, they would gradually accumulate funds and become independent of Government assistance.

The Silladar would benefit by being able to borrow at $6\frac{1}{4}$ per cent instead of 24 per cent, and also because the payment of interest stands over until he is in a position to pay it without inconvenience.

With reference to the amount which it would cost Government, it should be noted that no regiment which could possibly afford to do without it would ask for a loan, because, if the regiment has itself got the money to lend to the recruit, it would pay much better to get the whole of the interest at $6\frac{1}{4}$ per cent on the outstandings than to get a loan and then have to pay 4 per cent to Government.

The interest on the large outstanding accounts would eventually bring in a steady additional source of income to Horse Funds.

It will be noted from Statement A that the interest will amount to between five and six thousand rupees per annum, as soon as the proposed arrangement gets into working order, *i. e.*, after the recovery

of the advance made to recruits in the first year. In course of time regiments would be able to repay to Government the amount of the loan, as it will be noted from a perusal of Statement A that the annual profit to the regiment should be over Rs. 8,000 per annum.

To recapitulate, my proposals are as follows:—

- (1) Fix the horse price at Rs. 400.
- (2) " " pony " " " 50 *i.e.*, Rs. 25 per man.
- (3) Only demand Rs. 50 from a recruit as a deposit to cover clothing debt in case he deserts.
- (4) Barghirs to pay no deposit, but the native officers on whose horses they are mounted to be answerable for their debts in case of desertion.
- (5) Government to lend, to all regiments who require it, a sum of Rs. 150 per recruit (for nine years only) on which interest will be paid at 4 per cent
- (6) The balance of the horse and pony price to be lent by regiments at 6½ per cent (*vide* A.R.I., Vol. III, para. 224).
- (7) The Silladar to pay 6½ per cent on Rs. 375, the interest to be recovered after refund of the principal.
- (8) The subscription to the Horse Fund to be Rs. 3 per mensem, and 8 annas per mensem towards Pony or Mule Fund, *i.e.*, Rs. 3-8-0 per mensem for each Silladar.

The above refers only to the Horse and Pony Funds, but the following statements will show the proposed system of financing all the regimental funds, and also the benefit which the Silladar derives from working the funds on the above lines, compared to the system now in existence, under which the recruit is forced to borrow from the *bunnia* the amount demanded by the regiment as a deposit on enrolment.

The comparative cost of Silladar and Non-Silladar regiments is a point with which I do not propose to deal, but the statement given in the article previously referred to would seem to show that there is very little difference in the cost of up-keep, but the initial expenditure on Non-Silladar regiments is more than twelve times as great as on Silladar regiments, and in addition Government does not get as many men and horses for the money.

Few people will, I think, deny the fact that it is the system which has made the Silladar Cavalry what it is; self-reliance, resource and a state of instant readiness for service are its main characteristics and place it on a footing which is not attainable in any other branch of the service.

It would be a bad day for Government if the above qualities gradually died out, as they would most certainly do were the Silladar system to be abandoned. I think I have said enough to show that the Silladar system, with some small amount of help from Government, is capable of continuing to maintain an efficient cavalry at a cost far lower than any other known system.

STATEMENT A.

Showing proposed system of financing the Regimental Funds.

Funds.	Sources of income.	Approximate annual income.	Approximate annual expenditure.	REMARKS.
Horse Fund ...	(a) Subscription Rs. 3 per mensem ...	Rs. $3 \times 12 \times 621 = 22,356$	Rs. Rs. 60 Remounts at 400 = 24,000	*Amount which would be recovered yearly after the tenth year. In the case of regiments which could not afford to lend Rs. 375 per recruit and who have to borrow from Government, this item would be reduced.
Horse price = Rs. 400.	(b) Sale of casters at Rs. 50 each ...	$60 \times 50 = 3,000$	15 Mules at 200 = 3,000	
Pony Fund ...	(c) Interest on balance of horse and pony price, say, 50 recruits a year, at Rs. 115 each (vide Statement C, para. 2)	$115 \times 50 = 5,750^*$	Allowances to farriers, horse medicines, etc. = 2,400	
Pony price = Rs. 50.	(d) Subscriptions to Pony Fund at 8 annas per mensem.	$-/8/- \times 12 \times 621 = 3,723$	29,400	†Based on actuals in certain corps.
Regimental Fund ...	(e) Sale of cast ponies at Rs. 15 each ...	$15 \times 15 = 225$	Balance Credit = 5,654	
	(a) Interest on Government paper and bank interest on floating balance.	35,054	35,054	‡This would in reality amount to a larger sum if we count the sums realised for differences of pay on promotion.
	(b) Interest on balance of Regimental deposits at 6½ per cent. say, 50 recruits yearly at Rs. 5-10-3 each.	Varies according to financial position, but, say, 3,000† $50 \times 54 = 2,666$	Allowances to Rough Riders and others. Pay of Accountant, etc. = 2,000* Balance Credit = 1,266	
		3,266	3,266	

Store Fund including Saddlery, Clothing, etc.	(a) Subscription 4 annas per mensem ...	...	- / 4 / - × 12 × 625 = 1,867	Wages of Tailors, Mochis, etc.	1,856\$	Based on actuals in certain corps.
	(b) $6\frac{1}{4}$ per cent on balances of all store accounts. If value of saddlery, clothing, etc. = Rs. 160 the interest will be about Rs. 26 per man. 50 men at Rs. 26 each.		50 × 26 = 1,300\$	Miscellaneous items, say,	350	
			3,167	Balance Credited = 1,161	2,006	
Line Fund	Subscriptions 4 annas per mensem ...	...	- / 4 / - × 12 × 625 = 1,867	Repairs to lines Rs. 150 per mensem = 1,800	3,167	
Tent Fund	Subscriptions 2 annas per mensem ...	...	- / 2 / - × 12 × 625 = 933	Balance Credited = 67 18 new tents at Rs. 50 = 900	Balance Credited = 33	

N. B. — Total annual balance credit Rs. 8,181.

STATEMENT B.

Showing the financial position of a recruit in a Silladar Cavalry Regiment under the proposed system.

Item.	Dr.	Cr.	REMARKS.
Pay	Rs. s. p.	Rs.	
(Horse price instalments ...	...	31	
Store Fund	3 0 0		Out of the balance in credit (Rs. 6-2-2) the sowar has to feed himself. The price of a man's food is Rs. 3-8-0, as he gets compensation if it costs more. This leaves him Rs. 2-10-2 over to do what he likes with.
Horse Fund subscription...	2 8 0		
Pony "	3 0 0		N.B.—Repairs to line gear, pack saddle, etc., are paid for by the Troop Fund.
Store "	0 8 0		If the Silladar had borrowed his deposit money from the <i>bunnia</i> the amount which remains over (Rs. 2-10-2) would go to the <i>bunnia</i> towards repaying his debts.
Line "	0 4 0		When the Silladar gets his first G. C. badge he commences to pay Re. 1 per mensem towards his Regimental deposit of 1½ months' pay.
Tent "	0 2 0		When he gets his second G. C. badge his horse price instalment is increased to Rs. 4 per mensem.
Grain for horse and pony	9 10 0		When the Regimental deposit is paid off he pays Rs. 5 per mensem towards his horse price instalment.
Syve	10 4 0		Interest on the horse price, pony price, store account and Regimental deposit is recovered after they are paid up in full.
Bhisti	3 4 0		The sowar is clear of debt to the Regiment in 10½ years.
Dhobi	0 6 0		
Mochi	0 6 0		
Sweeper	0 2 10		
Barber	0 1 0		
Horse shoes, etc.	0 4 0		
Troop Fund ...	0 6 0		
	0 2 0		
	15 3 10		
Balance Credit	6 2 2		

STATEMENT C.

Showing actual saving to a Silladar who under the proposed system can borrow from the regiment (or Government) instead of from a *bunniā*.

Basis of Calculation { Horse and share of pony price = Rs. 425 Deposit on joining, say, Rs. 150 as compared with Rs. 50. Instalments to refund loan from <i>bunniā</i> at Rs. 2 per mensem.		Proposed system.		REMARKS.
Present system.	INTEREST. Rs. a. p.		INTEREST Rs. a. p.	
Rupees 150 lent by <i>bunniā</i> , repaid by instalments of Rs. 2 per mensem will be paid off together with interest at 24 per cent in 6 years 8 months ...	114 0 0	Rupees 50 lent by <i>bunniā</i> will be repaid in 25 months together with interest ...	13 0 0	In reality the saving to the sower is greater than shown in this statement because occasionally he will want to send money home or will incur extra expenses which will prevent his paying his instalment to the <i>bunniā</i> , and consequently the interest on his debt will be increased. If the deposit is higher than Rs. 150 the saving to the Silladar under the proposed system will be still greater.
The balance (Rs. 275) lent by the regiment at 6½ per cent will be paid off in 13 months ...	65 7 8	The balance Rs. 375 lent by the regiment will be repaid together with interest in 10 years 9 months ...	115 8 8	
Total interest paid on Rs. 425 ...	179 7 8	Total interest paid on Rs. 425 ...	128 8 8	
		Balance in favour of the Silladar ...	*50 15 0	
		Total ...	179 7 8	

* N. P.—A deposit of Rs. 50 is so small a sum that a recruit would in many cases be able to borrow it from one of the men in his squadron, and so would not be compelled to go to the *bunniā*. In this case his saving would be increased to Rs. 63-15-0.
If a recruit enlists in the first instance as a *barghur* he could soon save the Rs. 50 which would enable him to become a Silladar.

THE RELATIVE VALUE OF MUSKETRY IN MILITARY TRAINING.

(A Reply.)

BY MAJOR LESLIE CAMPBELL, BRIGADE MAJOR, ASSAM BRIGADE.

The article in the *Journal* for October 1906, to which this is reply, seems utterly opposed to most people's notions of the importance of musketry, and yet at the same time it is so well expressed that it is difficult to know where to begin in attempting to refute the arguments therein brought forward.

As the writer of the article says, our army does certainly show a marked superiority in target practice over other armies, but he apparently fails to see that "target" practice is but a means to an end. It seems impossible to simulate war any closer than is done nowadays, and in order to do so, we must have targets to practise at. The elementary ones are naturally large and easy, in order at first to teach, and then later with a view to preventing men getting rusty. Later on, more difficult, smaller, and less conspicuous targets are introduced and the practices are combined with tactics on a small scale. Some people may prefer differently shaped elementary targets than the bull's-eye ones now in force, but the principle is the same.

It is true that Sir Ian Hamilton in his book on the late war in Manchuria does not quote any occasion when, in his opinion, the superior marksmanship of British troops might have been the ruling factor, had they instead of Japanese been present; but probably this may be due to either of the following reasons:—

- (1) The difficulty of gauging results of infantry fire when combined with Artillery fire at the actual time.

This is very difficult even at field firing.

- (2) Because the spectator naturally sees more of the formations adopted and the tactics employed, than the results of fire.

This latter is also more apparent at peace manœuvres than the problematical results estimated by eye.

If the "cultivation of a very high standard of musketry" were not the "first and most essential quality" of the infantry soldier, its relegation to a second place would tell most seriously on morale, tactics, self confidence, and many other essentials of which it forms the backbone, and these are the very points brought forward by the writer as most important for the soldier.

Aiming by an indifferent shot is often sketchy, and is sometimes the cause of his bad shooting, more especially at long ranges. There are, of course, the differences due to the personal factor, and if one adds to this the differences in aim of men not so well trained

even as at present, the results would be enormous. This again tells against both concentration and observation of fire, leads to a waste of ammunition and other far-reaching results such as inefficient covering fire, feeble mutual support, and a corresponding increase of confidence on the part of the enemy.

In the whole of his article, Captain Baldwin seems to extol the advantage of the second best being good enough, whereas in every walk of life, it is usually conceded that only the best is good enough and the best cannot be attained except by long and arduous training. He treats musketry as if it were a subject that stands by itself and separate from all other training, but I think that very few will agree with him in this opinion.

The "War and Peace Conditions" quoted in the article under review are very true, but it is not logical to argue that under the stress of the battlefield, a mass of second rate shots is as good as an equal number of first rate shots. Although he does not advocate second rate shots, yet if less training, practice, time and interest were devoted to musketry, as he suggests, the result would be that soldiers would be second rate in shooting and in other essentials too.

The article gives the following definition of "collective fire," *i.e.*, "each individual selects and concentrates all his attention on hitting a particular and distinctive mark." Again, it says that "under peace conditions marksmanship is everything and fire discipline of comparatively slight importance." I have no hesitation in saying that both the definition and the statement *re* fire-discipline are absolutely wrong. In "collective fire," the unit commander selects the objective and his men's fire is concentrated on it. In this way, the unit commander controls the fire, and "fire-discipline" is the result. If each man were to select his own objective, the ranges would be different, there would be a complete absence of fire concentration, impossibility to observe results, and the unit commander to all intents and purposes would be a dummy.

Exactly what Captain Baldwin defines as "collective fire" is laid down in para. 120, Musketry Instructions, Native Army, as something to be navoided :—

"120.—Fire if scattered indiscriminately along an enemy's front can have little moral, or actual effect on him, but by being concentrated on one or more objectives, the moral force of the enemy is shaken. The surest way of checking an enemy's advance, or weakening his defence, is to inflict sudden and heavy loss at the most threatening portion of his line, and the surest way of doing this is by concentrating the fire of a great number of rifles on that portion."

It will thus be seen that Captain Baldwin's "obvious inference" that on service "there is practically no difference between a marksman and third class shot as far as fire effect is concerned," is based on incorrect and unsound ideas.

The ideal to aim at in training a unit in fire discipline, as defined in para. 127, Infantry Training, can in my opinion be compared to

a Maxim gun, the firer of which is in the position of the unit commander. He can switch his fire on to any desired target, then change his range and switch on to another in the quickest possible time. The difference in the strikes of the bullets is practically only due to the minute differences in the cartridges, the wind and the heat of the barrel. Apply this Maxim gun simile to a fire unit, and the latter would be perfect in efficiency so far as fire control and discipline are concerned. Nothing is successful in war that is not practised in peace: yet Captain Baldwin would have us believe that fire discipline is of comparatively slight importance under peace conditions, and therefore, presumably, a negligible quantity.

It is quite true that the physical and mental strain in action may and does cause shooting to be less accurate than under peace conditions, but this inaccuracy would be undoubtedly largely increased if the soldiers were not so thoroughly trained as our regulations now insist on. Moreover, with less training there would be less self-confidence and consequent loss of morale. The better shot a man is, the more interested is he in his rifle, and in most cases he is better acquainted with it than is the moderate shot. The same applies in the case of those who are keen on shikar. The keener the shikari, the more he knows of his guns or rifles, and the greater the care he bestows on them.

Again, I consider the writer to be on the wrong tack when he states that "the good shot is enabled to take a clearer and more minute aim than the moderate shot" because the "image reflected on the retina of the eye is clearer and better defined" in the former case than in the latter one. The good shot is not necessarily the man with the best eyesight. Good sight is an excellent start, but training is just as necessary to a man with good sight as to his less fortunate comrade with moderate sight. Many men with excellent sight are indifferent shots, and this simply from a want of such training as will arouse each individual's interest in his shooting capabilities: it is this that involves much time and trouble—the object being more to level up the moderate shots to a higher standard than to still more improve the shooting of reliable marksmen. It is the weakest links in the chain (and there are many of them) that need to be strengthened, and this cannot be done without patience and the expenditure of time.

Captain Baldwin, in writing of Infantry Training, says that "superiority of fire in war is gained not by superior marksmanship but by greater volume and concentration of fire," yet para. 126 (1), Infantry Training, says that "Troops should, as a general rule, seek to secure superiority of fire by accuracy rather than by rapidity." Infantry Training also quotes the following factors as necessary in order to obtain superiority of fire, *viz.*, numbers, leadership, armament, accuracy, cover, surprise.

Captain Baldwin is very down on the Maxim gun: he quotes all its disadvantages, some of which disappear when the gun is handled by a man who knows his job, but he says nothing of its

advantages. According to page 175 (c), Combined Training, a Maxim gun is considered equal to 25 rifles. If well handled, it should be a great help to its battalion and not "hamper manœuvring" as Captain Baldwin says it does.

Public opinion may have attributed Boer successes to their superior marksmanship, and I believe public opinion to have been practically correct. Writers of actual experience of the war say that the Boers were better than we were at decisive ranges and at snap-shooting. Their knowledge of the country and superior mobility were, of course, a great help to them.

The reduction of our annual allotment of ball ammunition by 50 rounds would undoubtedly be a retrograde step, and would reduce efficiency—it is *more* ammunition that is wanted, not *less*.

I will now take the qualities quoted as necessary in an ideally efficient soldier, *i.e.*, "courage, discipline, drill, tactical training, and musketry."

Courage and physique need no further exposition.

Discipline.—If carelessness, "slackness in drill" or "want of smartness in minor duties" be allowed in a regiment, it is not the fault of the "inordinate time" devoted to musketry. Rather is it the regiment's own fault; and sometimes due to the non-recognition of the fact that there are 24 hours in a day, and that more work is now expected of the soldier than in the past.

Drill, Tactical Training and Musketry are all akin to each other, especially the two last. If one were to try and pick out (with a view to enlarging on and lecturing) everything connected with musketry in the Infantry Training, one would find that practically all the tactics in the book had been collected.

Let us imagine one force trained absolutely up to date and all good shots, oppose them to an equally numerous force trained according to Captain Baldwin's ideas. Would any one hesitate for a moment as to which he would prefer to command?

In conclusion, I cannot do better than quote Mayne in "The Infantry Weapon and its Use in War." He says:—"Fire discipline is as necessary as manœuvre discipline.....it is a state produced by constant habits formed by the constant practice of correctly performed acts."

"Increased skill in shooting and increased fire discipline are necessary concomitants to increased power of rapid loading and rapid firing."

"What men are taught and are habituated to in peace-training, they will carry out in war."

"Infantry must be trained to the idea that the laurels of victory rest on the bayonet, and that the sole purpose of the rifle bullet and of the gun projectile in battle is to facilitate the bayonet assault, and hence we see the immense value of individual care in firing every bullet so as to promote the general cause and progress of the whole force."

PRIZE ESSAY—BURMA BRIGADE 1907.

BY MAJOR M. R. HURLY, 93RD BURMA INFANTRY.

MOTTO:—*Tempora mutantur et nos mutamur in illis.*

SUBJECT.

The Difficulties of Reconnaissance in Modern Warfare and the Best Methods of overcoming them.

It is almost unnecessary to lay stress on the vast importance of reconnaissance in every military operation in face of the enemy, in view of the fact that this has been recognised from all time; and it cannot be doubted that whereas of old a knowledge of the enemy's intentions and dispositions, the nature of the country in which he was likely to be met, and finally the position and powers of co-operation of our own troops or allies, was a necessary condition to achieving success, a knowledge of these points has become even more paramount now that armies fight at longer distances and enter upon campaigns with more extended lines of communication, while at the same time the difficulties attending accurate intelligence on all the above main headings of reconnaissance have hereby become the greater owing to the new conditions under which war is now waged.

As, however, the collecting of information concerning the enemy's forces and the nature of the theatre of war prior to the actual entry of the opposing forces into the latter, is the work of the Intelligence Branch, this does not come strictly within the scope of "Reconnaissance," and therefore our discussion may be said to deal only with the methods used in gaining information when the hostile armies are actually in or approaching the area of contact.

The system by which this information is still obtained has not altered to any material degree with the changes which have come about in warfare under modern conditions, and at the present time we have practically no other means at our command to gain this knowledge than lay at our disposal in the past, while every step in the improvement of arms and ammunition and every adaptation of tactics to the enhanced power of our weapons has made the carrying out of this time-honoured system of reconnaissance a matter of greater difficulty.

The system in question, which is similar in all armies and which our text-books teach us, consists for the most part in the

following methods of gaining information both of the enemy and of the country :—

- (1) By the use of mounted troops in independent bodies.
- (2) By infantry reconnoitring parties and single scouts.
- (3) By spies either of our own troops or friendly natives.
- (4) By the use of balloons and war-kites.

Nos. (1), (2) and (3) are the methods which all organised armies have used in historic times, No. (4) is of more modern introduction.*

CAVALRY.

The main duties of the independent cavalry in European warfare have heretofore been the concealing and covering of its own force, and the obtaining of information concerning the enemy and the country. Prior to the arrival of the opposing armies within striking distance of each other, it is on the mounted troops almost entirely that this duty of reconnaissance falls. The methods in vogue in war up to the present of handling the independent cavalry for the above purpose need not be more than briefly outlined. They are of a more or less stereotyped form and consist of a dispersion of the cavalry division or divisions over a wide area of country in the form of a fan, the units (squadrons) of the more advanced regiments being spread out in a long line of patrols within touch of each other. In rear of these within communicating distance come small compact bodies as supports, and at a similar distance in rear of the supports squadrons move as reserves, while a formed body consisting of one or more regiments will be still further in rear as a general reserve or rallying point. But while this formation aims chiefly at securing a protective screen, it is also capable of lending itself to the obtaining of information; for the patrols of the most advanced line are entrusted with the duty of ascertaining the strength and dispositions of the enemy while preventing any attempt on his part to discover theirs. In addition to this formation, however, certain parties of the advanced cavalry are detailed for the collecting of information only, and move out separately beyond the line of patrols. These are special patrols of trained men accompanied as a rule by officers, and their duties are to seek by every means information of the enemy at all costs and send it back.

It is evident, then, that the work of these patrols depends chiefly on secrecy, an eye for country, and general intelligence; in fact their success lies in outwitting the enemy's patrols and in penetrating his screen unobserved. So far conditions are much the same now as in the past; for there is in this nothing but the pitting of one man's abilities against another's. But the progress of these special reconnoitring patrols is dependent entirely on the advance of the cavalry as a whole, for they cannot sever them-

* Recent advices from Europe point to the formation of an aerial fleet in France: primarily, it may be assumed for intelligence purposes.

selves entirely from the latter, but must, at least occasionally, return to it. If therefore the main advance of the cavalry screen is checked it is evident that these patrols will also be eventually unable to proceed, and their power of further reconnaissance curtailed. In the event, then, of the enemy being met with, it is imperative that he should be swept back at once. It is now that the differences of warfare under modern conditions begin to display themselves. In the only more recent of the past European campaigns, the cavalry of both armies having got in touch, cavalry mounted combats were generally the ones which took place. The cavalry leader who was able to mass the greatest number of his force at any vital point was therefore able to overcome the resistance offered to him, and as a result to continue his march and his work of reconnaissance uninterrupted. Under the more recent methods of training and arming cavalry, however, this procedure will not necessarily be attended with the same results. Cavalry have now been armed with a rifle equal to that in the hands of the infantry and also their training is yearly tending more towards the employment of dismounted action when necessary, while maintaining an equally high standard of efficiency as mounted troops. We may, therefore, expect to see in the future a use of this arm wherein it has not been called upon to take part to a similar extent before in Europe, or only on exceptional occasions. The use of dismounted cavalry will, without doubt, in future enter largely into the earlier conflicts of the advance troops, the weaker side employing dismounted action to check the onward progress of the stronger, and the powers of the rifle in the hands of the former will materially increase the difficulties of overcoming this resistance, owing to the fact that, to dislodge dismounted cavalry, dismounted men only will be effective, and this will retard progress and consequently delay in reconnaissance.

We may therefore briefly summarise the new difficulties confronting the independent cavalry which form the reconnoitring branch of an advancing army in the earlier stages, as arising out of the hampering of their movements and consequent delay which the new training of the arm conjoined with the power of the modern rifle and gun and the effect of smokeless powder confer on the weaker hostile cavalry which adopts defensive tactics and dismounted action for his own advanced patrols. These difficulties must retard progress and react on the rapid collection of information by the stronger force.

The problem, therefore, which confronts the cavalry leader under the new conditions may be stated as follows:—If the advanced cavalry is checked, as it now can be, by the enemy's cavalry in inferior strength owing to the adoption by the latter of dismounted action and rifle fire, what are the best means by which this resistance should be overcome so as to allow of the continued advance of the contact squadrons? It is of course as a rule easier to discover difficulties than to suggest remedies for them, and in a matter of this sort which has been engaging the attention of cavalry experts of late and on which they do not by any means agree, it is only with the greatest

reserve that any suggestion should be adduced, more especially by one not belonging to the army concerned. But at the same time putting technical points on one side, the only way to meet difficulties of this description is to try to apply to them the dictates of common sense and to regard them from the broadest possible aspect.

The question now before us, then, is how can the reconnoitring work of the cavalry be continued even though the advanced squadrons are checked by a dismounted enemy?

Without the advance of some portion of our own cavalry line it is clear that the officers and reconnoitring patrols must be brought to a standstill even if these are not themselves discovered by the enemy. There are, therefore, two alternatives before the cavalry commander. He can dismount his own cavalry in order to dislodge the enemy, checking the advance until this is done. But this may be playing the enemy's game for him, supposing it be the latter's intention, being weaker in cavalry, merely to delay the advance of our mounted troops. Again, as a second alternative, he can engage the enemy at this point with a portion of his force pushing on the remainder of the advanced line. The latter seems a hazardous experiment, as it would lead to the breaking up of the continuity of the cavalry screen.

But there is yet another method which might be adopted. If with the general reserve of the independent cavalry a strong body of mounted infantry was invariably present, the advanced squadrons on being checked by the fire of dismounted cavalry could be reinforced by mounted infantry from the rear. On the arrival of the latter it would devolve on them to engage the hostile dismounted cavalry and to hold them to their position. The advanced squadrons would thus be freed to continue their onward progress unimpeded. It appears, then, that the presence of mounted infantry with the reserve of the independent cavalry will in future be a necessity, which means a considerable increase of infantry trained for this duty over what at present exists.

INFANTRY.

While the duty of reconnaissance in the wider area of the theatre of operations falls on the cavalry arm, it is upon the infantry that we shall have often to depend nowadays for information once the main forces arrive within striking distance of each other, although of course the divisional cavalry will aid materially in this work. For in the same way as the independent cavalry of an army undertakes the duty of reconnaissance far to the front of the army, so the cavalry squadron attached to each division will carry out the distant work of reconnoitring. When, however, the enemy's line of advance or position, if halted, has been located, the cavalry can do little more than remain in observation. When the opposing forces arrive at still closer distances, the power of reconnaissance on the part of the cavalry will practically disappear and the work of the infantry scouts will begin; for to these alone will it be possible to

approach sufficiently close to the enemy's position to enable a scrutiny of it to be obtained. This actual examination of the position must be made at all costs either by day or night, for without it actual knowledge is impossible. Before launching the attack, the enemy's strength, dispositions and even intentions must be ascertained, while a knowledge of the ground occupied by him and on his flanks and front is almost of more importance to the commander of the attacking force, since from this latter he can to some extent gauge the former.

RECONNAISSANCE PRIOR TO THE ATTACK.

In the attack of an enemy in position under modern conditions, the need of accurate reconnaissance is more imperative than in any other operation of war, while at the same time the difficulties attending it have increased in direct ratio to its enhanced importance. Formerly, as we may conclude, from the mode of carrying out the work of reconnaissance when troops were armed with rifles of low power and less precision, firing black powder, it was possible to compel an enemy in position to disclose his dispositions and the extent of his front by simply despatching the mounted troops to a point from which an actual view of the position was available without coming under aimed fire. It was indeed the object of the cavalry in such a case to approach so close as to draw this ineffectual fire, and it was therefore only a matter of time before the full extent of the position became known. Again, under former conditions an enemy's position was smaller and more defined and as a rule continuous, owing to the necessity of troops being within supporting distance of each other, and this distance was less as the range of arms was less. Nowadays the greatly increased range of both guns and rifles has tended to a proportionate dispersion in the defence, it being only necessary to hold certain important points within supporting distance of each other (*i.e.*, the range of effective rifle fire), the intervening spaces being either neglected or only lightly held. It is evident from this that the modern position is a totally different thing to what it used to be; for now, even a comparatively small force in the defence may extend over some miles of front, whereas of old, it would be confined to a more or less restricted area. Without then regarding other difficulties, the task before cavalry of ascertaining the extent of a position has become a more arduous one, and when we add to this the facts that cavalry cannot now expect even in the smallest bodies to be able to approach within a distance of the infantry trenches such as would allow them to examine these, and equally cannot penetrate the position even at its more weakly held points, it will be seen that for purposes of reconnaissance prior to an attack the use of cavalry is almost debarred. We say "almost," for it is not quite so. The divisional cavalry will have, no doubt, the first task of discovering roughly—(a) Where the position is; (b) What is its apparent extent; and lastly (c) Where its flanks rest, this latter being their most important duty. This work lies in

their power and will be of great use as a preliminary, but as a preliminary only. They are prevented owing to their organisation, their equipment and their value for other work, from being squandered in the task of closer and more accurate reconnaissance which must now be taken up by others. Following on the cavalry reconnaissance, it seems probable that the rôle of the infantry and mounted infantry will now begin. The latter, which it must be remembered have the power of infantry with the added advantage of mobility, will be sent to the flanks as this will entail longer distances being covered. They will then endeavour to obtain their information by working small parties and even single men (but supported) close to the enemy's position, either getting round the flank or at least gaining some ground from which a view of the position on their side is available. These posts of observation once gained will be held and entrenched in view of their being required as temporary points of vantage for the attackers when the attack eventually commences. In the meantime all information possible must be obtained. In this way the flanks being known, it will now devolve on the infantry to endeavour to pierce the screen of the nearer portions of the position. Scouts and trained reconnoiters will be used for this work, it being impressed upon them that it is in no way their duty to fight (except to avoid capture) but by every means in their power to approach the trenches and, having discovered these, to estimate their extent and, if possible, to even penetrate the undefended intervals. This work of the infantry scouts will probably have to be carried out largely by night or when fog and thick weather are present to aid them.

The use of balloons and war-kites is likely in the future to be more extensively adopted. They are both to some degree at present in an experimental stage, particularly the latter. But the power of viewing an enemy's position from them will undoubtedly tend greatly to solve the difficulties of the reconnaissance of a position prior to the attack.

Without further touching on these, then, it may be concluded from the lessons afforded by the most recent campaigns that as regards the attack the new difficulties offered to accurate reconnoitring can only be met by the means already indicated, namely by entrusting the work to the infantry scouts and to the mounted infantry, and allowing them to work either by day or by night, as is necessary, to discover those points of a position which it is not possible for them to approach by day. However, it must be borne in mind that time is more necessary now for accurate reconnaissance than was the case formerly and therefore hurry must be avoided. With ample time at command the task of discovering the enemy's dispositions is not by these means an insuperable one, and if that time is available a commander acts rashly in committing his troops to the attack until he has made every effort to pierce the veil in front of him by these methods. If time is the matter of greatest importance, a reconnaissance in force under the methods hereafter described would appear the only alternative.

PROTECTIVE RECONNAISSANCE.

Under what is called in the text-books "Protective Reconnaissance" may be included that which is used in the "Defence," and in outpost duty. Its main object being with a view to protection, its scope is consequently limited. Although subject to the same modifications as the more active reconnaissance already referred to from the changes brought about by the new power of arms and conditions of warfare, its methods have altered less. In the "Defence" the chief object of reconnaissance being towards receiving early news of the enemy's approach, his line (or lines) of advance and his strength, before he can bring fire to bear on the position, it follows that owing to the great increase of range in guns and rifles (particularly the former), reconnaissance must now be more extended and the work of reconnoitring, while devolving on the mounted troops almost entirely, will be carried out at further distances from the position. The difficulties before these troops are similar to those already enumerated and must be met under the new conditions by such means as have been already outlined. As regards outpost duty, the work of efficient protective reconnaissance will now similarly fall more on the mounted troops and less on the infantry owing to the greater distances to be covered, infantry reconnoitrers being only as a rule required to examine the country in the near vicinity of the line of sentries.

RECONNAISSANCE DURING MARCHES.

During marches the work of reconnaissance is the duty of the advanced and flank guards. It is to some extent "protective" also, and will now entail more work on the mounted troops owing to the necessity of discovering the enemy before the latter can, at the longer ranges now possible, bring fire to bear on the main body. In the case of mounted troops not being available—as in the case of a small force—it will be necessary for the infantry of the van guard and of the flank reconnoitring patrols to be further from the main body than was previously the custom. This will mean that advanced guards will have to be stronger than before in proportion to the force they are covering to allow of adequate support and connection with the advanced patrols. There is, however, as regards this, the redeeming point that the introduction of visual signalling tends to facilitate the conveying of information so that men detached to a distance are at least in communication with those in rear.

NIGHT RECONNAISSANCE.

During the late war in Manchuria the difficulty of obtaining information by day was met by both Russians and Japanese by recourse to night reconnaissance. In the Boer campaign such reconnaissance would often have aided in affording more accurate knowledge of the enemy's positions, but it was adopted to a very slight extent. The work of reconnoitrers by night is of course very difficult as men are both liable to go astray and also to form wrong

conclusions from what they discover. It calls therefore for the employment of thoroughly trained men only, and there is no doubt that our scouts should have special training in this night reconnaissance. It must be noted that this night work can only be supplementary to reconnaissance by day, but it will in cases go to fill in the details of the more general information afforded by the latter.

RECONNAISSANCES-IN-FORCE.

It has been an axiom that so-called "reconnaissances-in-force" are a counsel of despair and should only be used as a last resource failing every other means of discovering the enemy's dispositions. Under the newer conditions of warfare, however, it is open to doubt whether this view will not be modified under certain circumstances. There are occasions, it would seem, when this form of reconnaissance will prove the only possible one and, in the event of time being of value, the most expeditious and effective one.

Modern battles, as we know, are now to a greater extent affairs of gradual progress on the attacking side, and each step must be secured before an onward one is taken; attacks on positions, therefore, are not now matters of hours but rather of days. This being so, if it is necessary owing to urgency to dispense with what will inevitably otherwise be a long and deliberate preliminary reconnaissance, it is within the attacker's power to commence the attack on a wide area, it being understood that the object is more to force the enemy to disclose his positions than to assault any particular point or points. This general advance must be regarded as tentative only, but it will be deliberate, and its first object will be accomplished when fire is drawn from the position. Troops will have to entrench themselves and remain thus covered until nightfall when they can be reinforced and when a withdrawal without loss can be effected of those troops who it is found are not required on their present line of advance. In the next stage a further progressive movement will be made on the whole front, in which loss must necessarily be incurred, but in inflicting it the enemy can hardly avoid still further disclosing his position. When this is at last known, a decision can be come to as to the final and real attack, and troops can be massed by night opposite these points.

There is this to be said at least for such a reconnaissance-in-force; that valuable ground will have been gained for the actual attack when this commences; that it obviates the bad moral effect of a reconnaissance-in-force followed by a withdrawal leaving the same ground to be covered again; and that if time is an object it is more expeditious (although of course more costly) than a deliberate preliminary reconnaissance followed by an equally deliberate attack.

The example which occurs to us, when it would perhaps have effected much, was at the battle of Colenso. Here time was an object and a long reconnaissance was prevented by the urgency for the relief of Ladysmith. But the first efforts of the troops

were entirely wasted owing to an attack being made prematurely, followed by a disastrous withdrawal. Had this attack, however, been considered and acted upon as the first stage of a reconnaissance-in-force only and therefore not been carried so far in its earliest phase, loss would have been avoided, no retirement from ground already won would have taken place, and the troops would still have been confident knowing that they had succeeded in the first part of their enterprise.

PERSONAL RECONNAISSANCE.

It was the invariable practice of Napoleon to thoroughly reconnoitre an enemy's position himself before attacking it. The benefit of such personal reconnaissance is evident, for it goes without saying that no amount of information at second hand can make up for the want of a personal examination by a commander in such a case. But what was feasible in Napoleon's day has become difficult and sometimes impossible now. The enormous size of positions may at times make a personal reconnaissance an impossibility. The Russian position on the Taize-ho, for example, extended to some 40 miles. Any accurate knowledge in such a case by personal examination was out of the question except at the cost of enormous delay, and then it would be inadequate. A commander has therefore to trust more to information collected from various sources than before, and in fact, as decentralisation of actual command has been an outcome of the new methods of warfare, so decentralisation has also become necessary in the obtaining of information.

SUMMARY.

To sum up, then, we find that reconnaissance under modern conditions has become more difficult owing almost entirely to the introduction of long-range arms of precision, which renders near and accurate observation more hazardous; to the use of smokeless powder, which renders concealment more easy; to the dispersion of a force in the "Defence" possible from the increased range of arms; to the re-arming of cavalry with the infantry rifle which allows dismounted cavalry to seriously check the advance of the cavalry screen; and lastly to the decreased power of personal reconnaissance. As a consequence in the future it appears that reconnaissances of positions will be more the work of infantry and mounted infantry than of cavalry, except in the earlier stages, and that night reconnaissance will be more largely adopted. The check to the advance of a reconnoitring cavalry screen may be met by an increase of mounted infantry in conjunction with this arm. Reconnaissances-in-force may find more favour than formerly, within certain defined limits. And finally the factors militating against the power of personal reconnaissance can only be met by the more efficient instruction of those upon, whom, in its absence, the commander is dependent for his information and knowledge.

THE THOMASON ENGINEERING COLLEGE, ROORKEE, INDIA, AND ITS CONNECTION WITH THE ARMY.

BY MAJOR E. H. DE V. ATKINSON, R.E., PRINCIPAL, THOMASON
COLLEGE.

The object of this article is not only to describe the work that the Thomason College has done, and is doing, for the Army, but to give information to readers in general, and to soldiers in particular, about the facilities the College offers to smart, steady men, in opening up for them honourable and lucrative careers.

The Thomason College was established at Roorkee in the United Provinces in 1847, and ever since its foundation has offered to British soldiers opportunities for training as Overseers in the Military and Public Works Services of India.

It may be interesting first to take a brief glance at the past history of the College and to see the various phases through which the soldier classes have passed, before detailing the actual facilities offered at the present time.

The main point that influenced the establishment of the College was the necessity of some systematic training for Engineers in India. The Western Jumna Canals were commenced in 1817, and the Eastern Jumna Canal in 1822. In Dehra Dun, Rohilkhand, and near Delhi, works for drainage and irrigation were maintained requiring skilful superintendence. The roads from Jubbulpore to Mirzapore, the grand trunk roads from Calcutta to Delhi and from Agra to Bombay, and the Land Revenue Settlement Survey, had been just completed. It was apparent that there existed a large demand for skill in every branch of Engineering. To meet this demand there were officers of the Army, European non-commissioned officers and soldiers, and there were natives of the country. To make these efficient agents, the well educated Europeans, lately arrived in the country, required instruction in the native language, and in the peculiarities of materials and construction in India. The uneducated Europeans required scientific instruction, and the natives of the country, from their local experience and ability to bear exposure to the climate, were likely to prove efficient instruments if they were only well instructed and inspired with a proper sense of the importance of their position.

In 1847, after the conclusion of the First Punjab War, Lord Hardinge, the Governor-General, determined on the vigorous prosecution of the Ganges Canal. This undertaking, especially in the first few miles of its course, was beset with great engineering difficulties, and promised to tax to the utmost the skill, industry and resources of the people and of the country. The science that was necessary to construct a work of this magnitude would also be constantly kept in exercise for its maintenance, improvement and extension. Immediate measures were necessary to provide a constant supply of well trained and experienced Engineers who would

be able to face all the difficulties which were involved in the management of large undertakings of this nature. Out of this emergency Roorkee College arose. The reason for the selection of Roorkee as the site of the College were that there were the offices and headquarters of the new Ganges Canal, and large workshops and various important structures, such as the Solani Aqueduct, in the course of construction. There was also a Library and a Model room.

The choice of Roorkee was a most fortunate one. The climate is sub-montane, and far more bracing than the majority of stations in the plains. It is a remarkably healthy station, enteric fever being practically unknown, probably due to the climate and the excellent water-supply. The Ganges Canal which passes within half a mile of the College is a most impressive and monumental work. The canal enters the station by the Solani Aqueduct, after running in masonry embankment for about three miles. In the 19 miles between the head-works at Hardwar and Roorkee, two river beds are carried over the canal and the canal itself passes over the fourth, the Solani.

But to revert to the history of the College.

Three Departments were formed, of which the second was for training European non-commissioned officers and soldiers, with a view to their employment in the Public Works as Overseers. They were required, previous to admission, to prove by examination their proficiency in certain tests and to provide a certificate of character from their Commanding Officers.

In 1848 the second Department was complete in numbers, and work was carried on in tents till the buildings were completed. In the cold weather of 1848-49, the Second Punjab War broke out and the Principal and students marched for the frontier.

At the end of the Second Punjab War a large amount of additional territory was taken over, for which great undertakings, such as canals, and roads, were a vital necessity. The College, with its existing establishment and accommodation, was barely adequate for the instruction of those who then resorted to it, and was utterly inadequate, as at that time constituted, to meet the exigencies of the occasion. Mr. Thomason, the Lieutenant-Governor (after whom the College is named), at once grasped the situation and prepared a scheme for enlargement. One of the chief features of this scheme was the admission of officers both of the Royal and East India Company's armies to study at Roorkee. This was definitely sanctioned in 1852, and the class termed the Senior Department. The two first officers to enter were Lieutenants Baillie and Earle of the Artillery.

In the sixties, two more Military classes were opened at the College, one being an Officer's Surveying class, and the other for the admission of native soldiers into the Third or Lower Subordinate Department. These classes, however, only lasted as long as they were found necessary, and about this time the nomenclature of the classes was changed to that now in vogue, the Senior Department becoming the Engineer class, the Second Department the Upper Subordinate class, and the Third Department the Lower Subordinate

class. It is interesting to note that from 1849 to 1860, nearly all the soldiers in the Upper Subordinate class were recruited from the Artillery and the Sappers and Miners. After 1860, however, the Cavalry and the Line began to compete, and today the class contains representatives from every class of regiment in India. Previous to 1880, a Guides' class had been started with the idea of training native surveyors for the army. In 1880 this class was thrown open to the whole native army and called the Native Military Survey class. This class, which still exists, does an immense amount of useful work in training 25 native soldiers annually for work in the Intelligence Branch of the Army Staff.

So useful did this class turn out that in 1888 a British Military Survey class was formed on the same lines. Naturally the opportunities for this class to carry out Intelligence work are slight compared with those open to their Indian brethren, but seven men are trained annually, their services being utilised for reconnaissance and survey work in manœuvres and camps of training and in the Intelligence Branch. After leaving the College, men of both these classes have to obtain a certificate every year to show that they have done a certain amount of survey work during the year, and as long as they keep up to the mark receive a certain monthly stipend in addition to their pay.

In 1874 the Senior Department was abolished and Lieutenant G. K. Deane of the 4th Hussars was the last officer to pass out of the College. It is unnecessary to detail how the effect of the formation of Cooper's Hill College began gradually to be felt by the Thomason College; how Roorkee was made a College for statutory natives, which term includes Europeans domiciled in India. These events had no bearing on the soldier classes. In 1896 there was, however, a great awakening, which has had a distinct bearing on the training of the Upper Subordinate class. Old time methods were abolished, workshops and laboratories were started, and the whole curriculum changed to an eminently practical and up-to-date course. The three Military classes which survive to this day are the Upper Subordinate class, the British Military Survey class and the Native Military Survey class. The aim and scope of the survey classes has already been briefly detailed, and it may be of interest now to describe in detail the Upper Subordinate class showing how a soldier can gain admittance, what expenses he has to incur, what pay he receives, and what are his future prospects.

The class annually admits 40 students, 12 of the vacancies are reserved for soldiers, 11 for English civil and the remainder for Indians. The soldier is favoured in many ways. For the 12 vacancies he has to pass a competitive Entrance Examination, but as there are seldom more than 20 competitors, the competition is not very severe; this is very different to the case of the Indian section, in which about 200 men compete for the 17 vacancies reserved for them.

Further, on passing out, the soldier, if successful in gaining an appointment, is posted as a first grade Overseer, while the civil

English are posted as second grade and the Indians as third grade Overseers. The reason for this is that the soldier is much older; the others have to be under 21 years of age on entering the College, while the qualification for a soldier is that he has three years' service with the colours and is under 26 years of age. Before being allowed to appear for examination a soldier's Defaulter sheets have to be submitted to the Principal of the College. These are carefully scrutinised and practically a clean sheet is required; reprimands may be passed, but any D, however old, bars a soldier from the College. The Entrance Examination is conducted under the supervision of the soldier's Commanding Officer, and consists of Reading, Writing from Dictation, Arithmetic, Elementary Algebra, Euclid Books I and II, Hindustani, and Drawing as an optional subject. If the soldier has passed the "Lower Standard in Hindustani," it is omitted from his Entrance Examination, and if he can produce a certificate of his practical skill as a Carpenter, Mason or Smith, his Entrance Examination is confined to Reading, Writing and Hindustani. A circular giving full information is issued yearly by the College, and with the permission of Commanding Officers is hung up in all barrack-rooms in India. The names of successful students are published in General Orders and they join annually on the 15th of October. They are considered as doing duty at the College, and remain on the strength of their respective regiments without prejudice to their promotion or other advantages, until appointed to the Military Works Services or the Public Works Department, but after three months' absence from their regiments they become supernumerary. Commanding Officers are authorised to promote them (with the next man junior to them on the seniority roll), on the understanding that they would not have been superseded had they been serving with their corps, and that the Commanding Officers will be prepared to take them back in their seniority, in the higher rank, if not permanently admitted to the Public Services.

While at the College, soldier students wear the undress uniform of their rank and regiment and are under the command of the Principal, who is generally an officer of the Royal Engineers. They receive the same pay as when with their regiments, together with ration money and compensation in lieu of clothing and bedding. The complete course lasts three years, two of which are spent at the College, and the third in practical training on works as apprentices.

The College course consists of Elementary Mathematics, Mechanics, Natural Science, Drawing, Surveying, Public Works Accounts, Languages, Engineering, Workshops and Ferrotypes reproduction. A student can also take up Photography as a voluntary subject. The chief feature of the course is its very practical nature, especially as regards Surveying, Levelling, Testing Lightning Conductors and Workshops. Engineering is chiefly learned theoretically at the College, and afterwards practically for a year on works, but during the entire course notes have to be taken on all works of interest in progress in the vicinity. Two mornings a week are spent in the

workshops, where the students undergo courses in the Carpenter's shop, the Foundry, Forge and Fitter's shop, the aim being not so much to turn out skilled mechanics, as to give a student sufficient knowledge to be able to supervise work and to know good work from bad.

There is no doubt that if a student hopes to be successful, he has to work very hard while at the College, but he has excellent facilities for amusement and exercise. Hockey, Football, Tennis, Racquets, Rowing, Athletics, Gymnastics, Smoking Concerts and Dances offer him ample opportunity for wholesome relaxation. The vacations last from the 15th July to the 15th October, which are the rainy and feverish months at Roorkee. Any men who are recommended by medical authority for transfer to the hills are sent to the Landour Dépôt near Mussoorie, the others remain at the College, go on pass or return to their regiments.

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The monthly expenses of a soldier student at the College average about Rs. 30 and are as follows:—

			Rs.	a.	p.
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Newspapers	0	12	0
Lighting	2	0	0
Servant	3	0	0
Washing	1	0	0
Miscellaneous	4	12	0
			<hr/>		
			30	0	0

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	Rs.	a. p.	Rs.		Rs.	(C)	Rs.	a. p.		
Sergeant and Overseer, 1st grade	(A)	98 13 7	85		30		213	13 7	7	(A) Average rate of Military pay and allowances per month based on one year's enrolments.
Sergeant and Supervisor, 2nd grade	(A)	98 13 7	100		30		228	13 7	4½	
Sergeant and Supervisor, 1st grade	(A)	98 13 7	120		30		248	13 7	3½	
Sub-Conductor and Supervisor, 2nd grade	(B)	80 0 0	100		30		(B) 210	0 0	4½	(B) Sergeant, Overseer and Supervisors when promoted to the rank of Sub-Conductors get a personal allowance to make up the actual loss in emoluments which they would otherwise sustain.
Sub-Conductor and Supervisor, 1st grade	(B)	80 0 0	120		30		(B) 230	0 0	3½	
Sub-Conductor and Sub-Engineer, 3rd grade	(B)	80 0 0	170		30		280	0 0	3½	
Conductor and Sub-Engineer, 3rd grade		100 0 0	150		30		280	0 0	3½	
Conductor and Sub-Engineer, 2nd grade		100 0 0	200		30		330	0 0	2½	(C) When in independent charge of a Sub-Division.
Conductor and Sub-Engineer, 1st grade		100 0 0	300		30		430	0 0	Can go no higher. 2½	
Assistant Commissary and Sub-Engineer, 2nd grade.		180 0 0	200		30		410	0 0		
Assistant Commissary and Sub-Engineer, 1st grade.		180 0 0	250		30		460	0 0		
Deputy Commissary and Sub-Engineer, 1st grade.		225 0 0	250		30		505	0 0	Can go no higher.	
Commissary and Sub-Engineer, 1st grade		300 0 0	250		30		580	0 0		

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The general public had the most hazy ideas of the geography of Turkestan, while the sea of mountains lying between the Orenberg-Tashkend advance and India was believed and often even stated, by political writers, to extend to the country between the Caspian-Merv advance and India.

A glance at the accompanying sketch will show the complete fallacy of this idea. Between Herat and Russian territory lies a range of hills now known as the Paroparnisus, though the mountains to which this name was originally given lay far more to the east. This modern Paroparnisus was formerly believed to be an immense mountain barrier, but when the Boundary Commission moved to Herat and to the Russo-Afghan frontier they found that a coach and four could be driven from what is now New Chaman to the said Afghan frontier, over the Paroparnisus, without difficulty.

That is to say that the great sea of hills in the north gradually dies away to plain, and plain slopes to the immense depression north of Seistan. Into this depression flow the rivers of Southern Afghanistan, forming the vast extent of *Hamums* or swamps that lay to the north of Seistan. These *Hamums* in flood time cover many thousands of square miles. The water which forms them was in former days largely taken off in a vast system of irrigation, the

work of the inhabitants of the many ruined towns still to be seen along the Helmund valley. Wherever the first wave of Islam spread are to be found the remains of the early civilisation and prosperity it destroyed. An interesting account of the road from Quetta to Herat is to be found in Sir Thomas Holditch's book "The Indian Borderland." Further account of the Oxus region and Turkestan are to be read in the books now put at the disposal of officers in the confidential section of Brigade and Divisional Military Libraries

MORE NOTES FOR "Q" CANDIDATES.

BY MAJOR ALBAN WILSON, 8TH GURKHA RIFLES.

Having lately been up for "Q" myself, I venture to give a few more hints, which I hope may prove as useful as those in Major MacMunn's interesting article in your January number.

With all due deference to his opinion that you should not demand an orderly officer, signallers, etc., as the staff officer should be sufficient, I consider you would be only wise to arrange for a small signalling party, cavalry for choice, to accompany you, and so save time and horseflesh.

Again, one or two orderly officers may come in extremely useful; for instance, if, as occurred at my own test, the greater part of your cavalry bumps unawares into a strong infantry force and gets put out of action. The Board of course won't blame you for this, but you lose, nevertheless, a good deal of information, which a well mounted orderly officer might be able to obtain for you, in the absence of your cavalry.

Before your examination, you will probably have had two or three "preliminary canters," both in commanding a battalion and a mixed force, and during these you will have noticed some officers who are keen, well mounted and have a thorough knowledge of the country, having been over it many times, which you have not, in all probability.

One can generally tell a man whom one can work with, so ask one or two of those you think most suitable, if they would like to gallop for you on the eventful day, the odds are they will be only too pleased, and then ask their commanding officer if he can spare their services.

Your staff officer *may* be detailed for you, you may not know him, which is a heavy handicap, or he may not be very intelligent, which is worse, still whatever he is, I think he is more usefully employed in keeping a diary of the action, that is, a précis of the information received from different parts of the force, of the orders, verbal or otherwise, you issue subsequent to your first set which commenced the operations, and of any alterations or fresh dispositions you make, than in carrying messages. Then, when the "Stand-fast" has sounded, and the "Pow-wow" commenced, if you are asked what any part of your troops were doing, or what orders you gave at a certain period, you are able to refresh your memory at once from the diary he has kept for you.

Among other "etc's." I would recommend your asking your O. C. Cavalry, if the Cavalry happen to be Indian, to detail a man in

be able to face all the difficulties which were involved in the management of large undertakings of this nature. Out of this emergency Roorkee College arose. The reason for the selection of Roorkee as the site of the College were that there were the offices and headquarters of the new Ganges Canal, and large workshops and various important structures, such as the Solani Aqueduct in the course of construction. There was also a Library and a Model room.

The choice of Roorkee was a most fortunate one. The climate is sub-montane, and far more bracing than the majority of stations in the plains. It is a remarkably healthy station, entire fever being practically unknown, probably due to the climate and the excellent water-supply. The Ganges Canal which passes within half a mile of the College is a most impressive and monumental work. The canal enters the station by the Solani Aqueduct, after running in massive embankment for about three miles. In the 49 miles between the head-works at Haridwar and Roorkee, two river beds are carried over the canal and the canal itself passes over the fourth, the Solani.

But to revert to the history of the College.

Three Departments were formed, of which the second was for training European non-commissioned officers and soldiers with a view to their employment in the Public Works as Overseers. They were required, previous to admission, to prove, by examination, their proficiency in certain tests and to provide a certain view of character from their Commanding Officers.

In 1848 the second Department was complete in numbers, and work was carried on in tents till the buildings were completed. In the cold weather of 1848-49 the Second Punjab War broke out and the Principal and students marched for the frontier.

At the end of the Second Punjab War a large amount of territorial territory was taken over, for which great undertakings, such as canals and roads, were a vital necessity. The College with its existing establishment and accommodation was barely adequate for the instruction of those who then resorted to it, and was utterly inadequate as at that time constituted, to meet the exigencies of the occasion. Mr. Thomason, the Lieutenant Governor, after visiting the College (as named) at once grasped the situation and proposed a scheme for enlargement. One of the chief features of this scheme was the admission of officers both of the Royal and East India Company's armies to study at Roorkee. This was definitely settled in 1852, and the class termed the Senior Department. The first officers to enter were Lieutenants Byrnie and Earle of the Artillery.

In the next two more Military classes were opened at the College, one being an Officers Surveying class, and the other for the admission of native soldiers into the Third or Lower Subordinate Department. These classes, however, only lasted as long as they were found necessary, and about this time the mission of the college was changed to that now in vogue, the Senior Department becoming the Engineer class, the Second Department the United School native class, and the Third Department the Lower Subordinate

class. It is interesting to note that from 1849 to 1860, nearly all the soldiers in the Upper Subordinate class were recruited from the Artillery and the Sappers and Miners. After 1860, however, the Cavalry and the Line began to compete, and today the class contains representatives from every class of regiment in India. Previous to 1880, a Guides' class had been started with the idea of training native surveyors for the army. In 1880 this class was thrown open to the whole native army and called the Native Military Survey class. This class, which still exists, does an immense amount of useful work in training 25 native soldiers annually for work in the Intelligence Branch of the Army Staff.

So useful did this class turn out that in 1888 a British Military Survey class was formed on the same lines. Naturally the opportunities for this class to carry out Intelligence work are slight compared with those open to their Indian brethren, but seven men are trained annually, their services being utilised for reconnaissance and survey work in manœuvres and camps of training and in the Intelligence Branch. After leaving the College, men of both these classes have to obtain a certificate every year to show that they have done a certain amount of survey work during the year, and as long as they keep up to the mark receive a certain monthly stipend in addition to their pay.

In 1874 the Senior Department was abolished and Lieutenant G. K. Deane of the 4th Hussars was the last officer to pass out of the College. It is unnecessary to detail how the effect of the formation of Cooper's Hill College began gradually to be felt by the Thomason College; how Roorkee was made a College for statutory natives, which term includes Europeans domiciled in India. These events had no bearing on the soldier classes. In 1896 there was, however, a great awakening, which has had a distinct bearing on the training of the Upper Subordinate class. Old time methods were abolished, workshops and laboratories were started, and the whole curriculum changed to an eminently practical and up-to-date course. The three Military classes which survive to this day are the Upper Subordinate class, the British Military Survey class and the Native Military Survey class. The aim and scope of the survey classes has already been briefly detailed, and it may be of interest now to describe in detail the Upper Subordinate class showing how a soldier can gain admittance, what expenses he has to incur, what pay he receives, and what are his future prospects.

The class annually admits 40 students, 12 of the vacancies are reserved for soldiers, 11 for English civil and the remainder for Indians. The soldier is favoured in many ways. For the 12 vacancies he has to pass a competitive Entrance Examination, but as there are seldom more than 20 competitors, the competition is not very severe; this is very different to the case of the Indian section, in which about 200 men compete for the 17 vacancies reserved for them.

Further, on passing out, the soldier, if successful in gaining an appointment, is posted as a first grade Overseer, while the civil

English are posted as second grade and the Indians as third grade Overseers. The reason for this is that the soldier is much older, the others have to be under 21 years of age on entering the College, while the qualification for a soldier is that he has three years' service with the colours and is under 26 years of age. Before being allowed to appear for examination a soldier's Defaulters sheets have to be submitted to the Principal of the College. These are carefully scrutinised and practically a clean sheet is required; reprint is may be passed, but any D, however old, bars a soldier from the College. The Entrance Examination is conducted under the supervision of the soldier's Commanding Officer, and consists of Reading, Writing from Dictation, Arithmetic, Elementary Algebra, Euclid Books I and II, Hindustani, and Drawing as an optional subject. If the soldier has passed the "Lower Standard in Hindustani" it is omitted from his Entrance Examination, and if he can produce a certificate of his practical skill as a Carpenter, Mason or Smith, his Entrance Examination is confined to Reading, Writing and Hindustani. A circular giving full information is issued yearly by the College, and with the permission of Commanding Officers is hanging up in all barrack-rooms in India. The names of successful students are published in General Orders and they join annually on the 15th of October. They are considered as doing duty at the College and remain on the strength of their respective regiments, with no prejudice to their promotion or other advantages, until appointed to the Military Works Services or the Public Works Department, but after three months' absence from their regiments they become supernumerary. Commanding Officers are authorised to promote them with the next man junior to them on the seniority roll, on the understanding that they would not have been superseded had they been serving with their corps, and that the Commanding Officers will be prepared to take them back in their seniority in the higher ranks if not permanently admitted to the Public Services.

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Servant	3	0	0
Washing	1	0	0
Miscellaneous	4	12	0
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Table showing the pay and prospects of an Overseer in the Military Works Services:—

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	Re.	s.	d.	Re.	s.	d.	Re.	s.	d.	Re.	s.	d.		
Sergeant and Overseer, 1st grade	(A)	9s	13 7	85			30			213	13	7	7	(A) Average rate of Military pay and allowances per month based on one year's emoluments
Sergeant and Supervisor, 2nd grade	(A)	9s	13 7	100			30			22s	13	7	4½	
Sergeant and Supervisor, 1st grade	(A)	9s	13 7	120			30			24s	13	7	3½	
Sub-Conductor and Supervisor, 2nd grade	(B)	8s	0 0	100			30			11s	210	0 0	4½	(B) Sergeant, Overseer and Supervisors when promoted to the rank of Sub-Conductors get a personal allowance to make up the actual loss in emoluments which they would otherwise sustain.
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Sub-Conductor and Sub-Engineer, 3rd grade	B	7s	0 0	170			30			2s	250	0 0	3½	
Conductor and Sub-Engineer, 3rd grade		10s	0 0	150			30			2s	280	0 0	3½	
Conductor and Sub-Engineer, 2nd grade		10s	0 0	200			30			3s	310	0 0	2½	(C) When in independent charge of a Sub-Division
Conductor and Sub-Engineer, 1st grade		10s	0 0	250			30			4s	340	0 0	Can go no higher	
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Among other "etc's." I would recommend your asking your O. C. Cavalry, if the Cavalry happen to be Indian, to detail a man in

addition to your other orderlies, who can read any vernacular reports which may come in, otherwise you may find yourself in a fix on getting "chits" written in a character, which perhaps neither you nor your staff officer can read.

On the day you are put in command of a mixed force, be sure to get to the rendezvous some minutes before the troops come up. Get the C. O.'s together as they arrive, find out the strength of their units, tell the O. C. Cavalry to detail *at once*, say, three "special" patrols to come to you there and then, and when you have got your orders out, tell them, in his presence, exactly what you want them to do, and that they are to report to you *personally*. Tell him also to have advance or flank guards, as may be needful, ready detailed. Have a gun escort told off. Although C. T. 119 implies that this escort is unnecessary, if protection of the artillery is ensured by the distribution of the other arms, it is just as well to have it told off beforehand in case it may be wanted, and if it is not required, no harm is done.

Unfortunately C. T. 119 (4) and F. A. T., section 6, are at variance. The former says that the senior officer will command the escort, irrespective of what arm he belongs to, while the latter lays down that the escort is under the orders of the O. C. R. A. Therefore tell the senior officer with the escort to consult with the O. C. R. A., as to what ground he is to occupy to protect the guns.

All this work can be done, before the General and Special Ideas are given out, which saves time afterwards in getting your force in motion.

The General and Special Ideas will be handed to you, and also to C. O.'s and others. Read them through carefully aloud, and fold your map into the shape which will best include all places mentioned in the scheme, and pin it firmly with two strong safety pins, so that when you pull it out of your haversack or wallet later on, it will come out ready for use.

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Read your scheme through again and write your orders. Your staff officer is not allowed to write them for you, but no Board would object to his making a copy, at the same time you write, for future reference, as you have to give your copy up, nor do I think the regulations on the subject are read to mean that you must write all subsequent messages yourself.

Be sure to head your orders properly, and remember to specify the map you refer to therein, for some officers may have maps of the same country on different scales, and the squares on them may not agree.

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The rest of your force will have been following on according to your orders.

The business of your special patrols is to prove, as far as possible (whether you are on the offensive or defensive), the position of the enemy's flanks and centre, and the sooner you get an idea of where these are, the quicker you will be able to form an opinion of what his plans are likely to be, and make your own accordingly.

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Above all things, on the defensive, remember what C. T. 130 says, that it is a mistake, particularly with a small force, to expect the enemy from any particular direction, so keep your troops in hand till you have ascertained the enemy's line of advance, merely covering yourself with outposts. Even if you are given time to entrench, which means, of course, that the Board intend the battle to come off somewhere in your immediate vicinity, arrange your defences so as to be ready for an attack from front and flanks, and *never* unless positively ordered to do so take up a position with a defile in rear. If you are told to take up such a position, be sure it is to see what you will make of a bad job, and *do not*, as I heard of one officer doing, say to the Board that no one would occupy such a position and promptly select another, or you will most likely share the same fate he did for not carrying out the scheme allotted to him.

If you are asked why you did so and so, do not jump to the conclusion you have done wrong, give your reasons as simply as possible, and not as if you were excusing yourself.

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INTRENCHING TOOLS FOR INFANTRY.

BY LIEUT. J. P. VILLIERS-STUART, 55th COKE'S RIFLES, F. F.

Most people in these days seem to be agreed as to the necessity of every infantry soldier carrying some form of intrenching tool.

In the majority of cases a spade is advocated, and the object of this paper is to endeavour to show that an axe compares very favourably with a spade as an all round implement to be carried by infantry.

A great many intrenching implements have been invented from time to time, and none of them would appear to have been complete successes, mainly, I think, because in most cases a spade is the basis, and you cannot make a spade small enough not to impede the man who carries it, without removing its efficiency as a spade. I take it that a spade to be of any use must be at least two feet long in the handle alone, and however such an implement is carried it must be very much in the man's way, whether carried on his back or in a frog on his belt. No one can run over bad ground with a sort of tail catching him as he runs.

Secondly a spade must be fairly heavy or you cannot cut into hard ground with it. Now as regards weight I think it is interesting to remember Stonewall Jackson's remark at the beginning of the Valley Campaign when he replied to a remark that the enemy had superior numbers by saying that the Confederates must counteract that by greater rapidity of movement. He certainly was brilliantly successful and it is noteworthy that his troops marched very lightly equipped. Napoleon's 10th maxim is in the same strain. The British army, being rather in the position of the "small force" compared to many it may have to fight, needs to be able to move fast and far; and to load the men as in a foreign army will lessen their powers of marching. But if powers of moving fast *strategically* against superior numbers are necessary, powers of moving fast *tactically* are at least equally so. I think no one who has ever seen a regiment which is really good at fast "light infantry" skirmishing work would care to see them lose their pace by being loaded too heavily. To skirmish successfully a man needs to dash from cover to cover, up and down hills, etc., and not merely to double or go at a walk, and it is a sight worth seeing the dash and confidence with which a really fast moving regiment tackles its enemy either in an attack or in a retirement, and how it can worry slower moving troops opposed to it.

To follow this line of argument then for what it is worth, it would be surrendering one's tactical mobility, to carry any intrenching tool which by its weight or shape would impede the soldier. And so far no one has yet been able to invent an *efficient* form

of spade or spade and pick combined, which would not do so. A small mattock is carried in some regiments. But this, though good for digging with up to a certain point, loses the great point in favour of the axe, namely, that it is not a cutting tool, and on very many campaigns a cutting tool is of at least as great importance as a digging one.

The axe I would suggest is the one stocked in the Home Ordnance as "axes, hand, 2 lb. 2 oz." and hence its weight is not great. In appearance it is a miniature "American felling" axe, *i.e.*, it has a thick solid head which does not break easily. The handle is only one foot long so that when carried in a frog on the man's belt it would offer no impediment to moving at top speed over the worst ground (which a long handled spade carried "as a tail" would) or in negotiating thick bush or obstacles, which a long handled spade carried on the man's back would.

The advantages of the axe beyond the above would seem to be —

- (i) It can be used for clearing a field of fire.
On service this frequently requires to be done and is often very hard to do for lack of tools.
- (ii) It can be used for clearing obstacles or making obstacles, abbattis, bridges, etc.
- (iii) It is invaluable to men in bivouac, firstly to make their shelters with, and also to cut up firewood, chop meat, mend tent-pegs, etc.
- (iv) In trans-frontier expeditions it would be invaluable as an aid to destroying villages. At present when firing them it is sometimes hard to get them to burn properly for want of a draught which is often hard to make without cutting tools.
- (v) For making cover under fire the axe is practically as good as any of the small spades yet invented. A man even lying down can loosen the earth with an axe and pile up the earth with his hands. Small intrenchments have actually been made on service with these axes though no occasion arose for intrenching under fire in the campaign in which they were used.

The great value of a cutting tool in camp and on service is pretty strongly borne out by the Gurkhas and their kukris, but for men unskilled in the use of the kukri, the solid headed axe whose edge does not easily break would be more suitable.

To sum up: (i) In the case of a big fairly heavy spade or combination spade being carried:—

No really efficient form of spade, spade and pick, or mattock can be carried on the soldier without impeding him and thereby losing tactical mobility. And secondly any such form of implement does not meet the want of a cutting tool. Hence real heavy intrenching can only be hoped for when the tools carried on the pack mules can be got at; and as an eminently practical work like Combined Training

lays down in para. 122, that in the attack intrenching in the open will generally have to be left to the hours of darkness (and it is difficult to see how it can be otherwise) this arrangement seems to meet requirements as far as is possible. Again if the ground over which the attack takes place is broken, mules can practically always be brought close enough to make the heavy tools accessible. In the defence of a position heavy tools would presumably be available.

- (ii) A small spade is of little use and is not a cutting tool.
- (iii) A small mattock is fairly good but is not a cutting tool.
- (iv) A small axe though not as good as (i) for digging is as good as (ii) and practically as good as (iii), supplies the urgently needed want of a cutting tool, and increases the man's comfort in camp or bivouac.

UNIVERSAL MILITARY TRAINING AS A SUBSTITUTE FOR THE VOLUNTARY SYSTEM.

BY CAPTAIN A. D. PICKFORD, UNITED PROVINCES LIGHT HORSE.

Every thoughtful Volunteer, and it is to be hoped some who are not Volunteers, will be grateful to Captain Hawkins for his admirable exposition in the January number of the *Journal* of the difficulties under which the cause of Volunteering labours. Captain Hawkins brings out with great clearness the fact that, while the sympathy of Government and the military authorities generally is genuine and real, the average Volunteer does not feel convinced that such is the case.

Several causes may have contributed to this regrettable feeling—individual lack of sympathy here and there on the part of officers of the Regular Army—occasional ignorance (not unnatural as the subject constitutes a very special study) of Volunteering conditions on the part of those in whom the interests of Volunteers may be vested. The fact that Volunteer officers, whose ignorance of their duties and obligations is a byword amongst the rank and file, can continue in possession of their commissions, and so on. The list of causes, most frequently of a special local or temporary nature, can be multiplied indefinitely, but is it certain that we are not blinding ourselves to the real reason why Volunteers, non-Volunteers, and Regulars are dissatisfied with the existing condition of things? I venture to think we are so blinding ourselves and that the true cause of our dissatisfaction lies in the consciousness, whether confessed or not, that the system rests on unsound foundations and the fact is patent that many years of earnest endeavour have failed to do more than create spasmodic and local bursts of interest in Volunteering. In no sense can the Volunteer movement be called truly national. The system is, in the opinion of many, unsound—

- (a) Because the few are bearing the burden of the many.
- (b) Because keen Volunteers are continually discouraged by those who are slack.
- (c) Because the chief factor in any form of efficiency,—namely, Discipline, cannot be enforced.
- (d) Because the system is costly to the State, each so-called efficient Volunteer in India costing the tax-payer about Rs. 75 per annum, that is roughly 26 lakhs a year.
- (e) Because all figures of Volunteer efficiency (an elastic and dangerous word) are misleading, and the real figure of cost per *efficient* Volunteer is probably much nearer Rs. 150 yearly.
- (f) Because the efficiency of units varies dangerously according to the personality of the Unit Commander, a factor no

scheme of military organisation can take into consideration.

- (g) Because the system is costly to the individual in point of money expenditure, since all Volunteers are not keen Volunteers and money must be spent on attractive non-essentials provided as a sop to secure a reasonable amount of work on essentials—work that even then is too often of a half-hearted nature.
- (h) Because the waste of time, when punctuality cannot be insisted on, is prodigious—a waste which naturally falls most hardly on the keenest Volunteers.

The importance of these considerations lies in the fact that they are *inseparable from any Voluntary system*. They follow on human nature and no organisation will do more than affect the degree to which these defects obtain.

The excellence of Railway Corps cannot be cited in support of the present system, for they are not Volunteers at all. Railway servants do not volunteer—they accept, quite naturally, the obligations of Drill and Musketry because appointments in that service are not obtainable otherwise.

I would like to add one more to the apt quotations given in Captain Hawkins' article. It was contained in a paper in one of the Service Journals and, if my memory serves me aright, was to the following effect:—

"The nation must depend on the patriotism of its citizens, but it must be the patriotism of forethought, prudence, and preparation not the emotional sentiment aroused when the enemy is at the gate."

Is the patriotism of the nation's citizens as displayed in the Volunteer movement one of forethought, prudence or preparation? It cannot be so described when modern requirements are taken into consideration. The number of those who ignore their civic duties in this particular is evidence enough that active patriotism to the required extent is lacking, and I maintain that, however galling the confession may be to our national pride, the situation should be honestly and squarely faced. Only then shall we cease propping up a rickety structure and commence the formation on solid foundations of a system suited to our national needs.

The feeling is growing apace that no satisfactory solution of this vital question will be found short of a system of Compulsory Training, and it is time that those who hold this view should abandon a passive attitude and take an active part in educating the nation to the acceptance of a system which, when shorn of its illusions, has no real terrors. The National Service League, of which Lord Roberts is President, is an instrument ready to the hand of every citizen—whether soldier or civilian. The demand for Compulsory Training must come from the civilian public and it is only by means of organised effort such as this League provides that an united expression of opinion can be given—one, that is, to which Government can respond with confidence.

The chief opposition may be expected from some of those who have not been Volunteers and from those employers who tell themselves that their abstention from active encouragement will not prevent the enthusiastic few from protecting their lives and property on the occurrence of trouble so serious as to necessitate the withdrawal of the natural protection of the Regular troops. To such opposition no attention need be paid, for if Compulsory Training has any drawbacks, on them lies the chief responsibility. From many non-Volunteers support may be looked for, since in justice it must be stated that many have been deterred from joining or have left the ranks on account of the inherent and disheartening defects so apparent in the system. This is, at least, better than mere apathy. It is significant that the keenest advocates of Compulsory Training are to be found amongst Volunteer officers, who must, from the circumstances of the case, be the best judges of the difficulties and defects attaching to the Volunteer system. Opposition may, however, be found in the ranks of Volunteers themselves. A section may stand up in defence of a system which, with all its defects, has been productive of very tangible results in time of war, and has at all times called forth much self-sacrifice and other good qualities. To such opposition every respect must be paid, but, if it occurs, it will be found to come from corps advantageously situated or circumstanced. Under existing circumstances it is dangerous to localise and these should remember that mere drawbacks in their case may become, under less favourable circumstances, paralysing defects.

Compulsory *Training* (not *service* be it noted) will mean that the present waste of time, money, and effort will be concentrated into a thoroughly effective expenditure of all three, will provide real instead of nominal efficiency, and will add many thousands of reliable men to the firing line. If at the same time it releases from the ranks those earners of capitation who are physically unfit to bear the burden of a day's march who will say that that is no benefit? Future generations would be weighted with fewer such.

The reports on Railway Corps as contrasted with purely Voluntary Units indicate to some extent the improvement in efficiency obtained by compulsion and without the same waste of time. The high standard of efficiency of the Behar Light Horse, too, where most managers compel their assistants to become members is well known, and this despite the fact that the members are scattered over a very wide area. The presence at the same time of excellent *esprit de corps* would seem to indicate that compulsion weighs, in either instance, but lightly on those concerned.

To those who prate of Jingoism, Militarism, Conscription or any of the other misapplied terms now utilised for the evasion of civic duty, the answer, even apart from inaccuracy, is easy. Far-seeing nations provide themselves with sufficient defensive material to warn off their enemies, actual or potential, and only malevolence can pretend to discover in such a course a desire to institute wars of aggression. Fear of being called hard names has never yet been

addition to your other orderlies, who can read any vernacular reports which may come in, otherwise you may find yourself in a fix on getting "chits" written in a character, which perhaps neither you nor your staff officer can read.

On the day you are put in command of a mixed force, be sure to get to the rendezvous some minutes before the troops come up. Get the C.O.'s together as they arrive, find out the strength of their units, tell the O.C. Cavalry to detail *at once*, say, three or four patrols to come to you there and then, and when you have given your orders out, tell them, in his presence, exactly what you want them to do, and that they are to report to you *personally*. Tell him also to have advance or flank guards, as may be needed, ready detailed. Have a gun escort told off. Although C.T. 119 implies that this escort is unnecessary, if protection of the artillery is ensured by the distribution of the other arms, it is just as well to have it told off beforehand in case it may be wanted, and if it is not required no harm is done.

Unfortunately C.T. 119 (4) and F.A.T., section 6, are at variance. The former says that the senior officer will command the escort, irrespective of what arm he belongs to, while the latter lays down that the escort is under the orders of the O.C. R.A. Therefore tell the senior officer with the escort to consult with the O.C. R.A. as to what ground he is to occupy to protect the guns.

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Be sure to heed your orders properly, and reminders not to see to the map you refer to, for some officers may have never seen the same country, and different scales, and the squares on their maps may agree.

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EXERCISES FOR QUALIFYING CANDIDATES

1. The following Board are there to find out if you know something you don't know. You are not imbued with a false sense of security. You seem to think that you know. But do not pretend to put forward what the Board has learned nearly all from the examination of the candidates during the field tests this year at Lake Umbagog. It is a matter of going up for, and the satisfaction of the examination.

INTRENCHING TOOLS FOR INFANTRY.

BY LIEUT. J. P. VILLIERS-STUART, 55th COKE'S RIFLES, F. F.

Most people in these days seem to be agreed as to the necessity of every infantry soldier carrying some form of intrenching tool.

In the majority of cases a spade is advocated, and the object of this paper is to endeavour to show that an axe compares very favourably with a spade as an all round implement to be carried by infantry.

A great many intrenching implements have been invented from time to time, and none of them would appear as to have been complete successes, mainly, I think, because in most cases a spade is the basis, and you cannot make a spade small enough not to impede the man who carries it, without removing its efficiency as a spade. I take it that a spade to be of any use must be at least two feet long in the handle alone, and however such an implement is carried it must be very much in the man's way, whether carried on his back or in a frog on his belt. No one can run over bad ground with a sort of tail catching him as he runs.

Secondly a spade must be fairly heavy or you cannot cut into hard ground with it. Now as regards weight I think it is interesting to remember Stonewall Jackson's remark at the beginning of the Valley Campaign when he replied to a remark that the enemy had superior numbers by saying that the Confederates must counteract that by greater rapidity of movement. He certainly was brilliantly successful and it is noteworthy that his troops marched very lightly equipped. Napoleon's 10th maxim is in the same strain. The British army, being rather in the position of the "small force" compared to many it may have to fight, needs to be able to move fast and far; and to load the men as in a foreign army will lessen their powers of marching. But if powers of moving fast *strategically* against superior numbers are necessary, powers of moving fast *tactically* are at least equally so. I think no one who has ever seen a regiment which is really good at fast "light infantry" skirmishing work would care to see them lose their pace by being loaded too heavily. To skirmish successfully a man needs to dash from cover to cover, up and down hills, etc., and not merely to double or go at a walk, and it is a sight worth seeing the dash and confidence with which a really fast moving regiment tackles its enemy either in an attack or in a retirement, and how it can worry slower moving troops opposed to it.

To follow this line of argument then for what it is worth, it would be surrendering one's tactical mobility, to carry any intrenching tool which by its weight or shape would impede the soldier. And so far no one has yet been able to invent an *efficient*

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lays down in para. 122, that in the attack intrenching in the open will generally have to be left to the hours of darkness (and it is difficult to see how it can be otherwise) this arrangement seems to meet requirements as far as is possible. Again if the ground over which the attack takes place is broken, mules can practically always be brought close enough to make the heavy tools accessible. In the defence of a position heavy tools would presumably be available.

- (ii) A small spade is of little use and is not a cutting tool.
- (iii) A small mattock is fairly good but is not a cutting tool.
- (iv) A small axe though not as good as (i) for digging is as good as (ii) and practically as good as (iii), supplies the urgently needed want of a cutting tool, and increases the man's comfort in camp or bivouac.

UNIVERSAL MILITARY TRAINING AS A SUBSTITUTE FOR THE VOLUNTARY SYSTEM.

BY CAPTAIN A. D. PICKFORD, UNITED PROVINCES LIGHT HORSE.

Every thoughtful Volunteer, and it is to be hoped some who are not Volunteers, will be grateful to Captain Hawkins for his admirable exposition in the January number of the *Journal* of the difficulties under which the cause of Volunteering labours. Captain Hawkins brings out with great clearness the fact that, while the sympathy of Government and the military authorities generally is genuine and real, the average Volunteer does not feel convinced that such is the case.

Several causes may have contributed to this regrettable feeling—individual lack of sympathy here and there on the part of officers of the Regular Army—occasional ignorance (not unnatural as the subject constitutes a very special study) of Volunteering conditions on the part of those in whom the interests of Volunteers may be vested. The fact that Volunteer officers, whose ignorance of their duties and obligations is a byword amongst the rank and file, can continue in possession of their commissions, and so on. The list of causes, most frequently of a special local or temporary nature, can be multiplied indefinitely, but is it certain that we are not blinding ourselves to the real reason why Volunteers, non-Volunteers, and Regulars are dissatisfied with the existing condition of things? I venture to think we are so blinding ourselves and that the true cause of our dissatisfaction lies in the consciousness, whether confessed or not, that the system rests on unsound foundations and the fact is patent that many years of earnest endeavour have failed to do more than create spasmodic and local bursts of interest in Volunteering. In no sense can the Volunteer movement be called truly national. The system is, in the opinion of many, unsound—

- (a) Because the few are bearing the burden of the many.
- (b) Because keen Volunteers are continually discouraged by those who are slack.
- (c) Because the chief factor in any form of efficiency,—namely, Discipline, cannot be enforced.
- (d) Because the system is costly to the State, each so-called efficient Volunteer in India costing the tax-payer about Rs. 75 per annum, that is roughly 26 lakhs a year.
- (e) Because all figures of Volunteer efficiency (an elastic and dangerous word) are misleading, and the real figure of cost per *efficient* Volunteer is probably much nearer Rs. 150 yearly.
- (f) Because the efficiency of units varies dangerously according to the personality of the Unit Commander, a factor no

scheme of military organisation can take into consideration.

(g) Because the system is costly to the individual in point of money expenditure, since all Volunteers are not keen Volunteers and money must be spent on attractive non-essentials provided as a sop to secure a reasonable amount of work on essentials—work that even then is too often of a half-hearted nature.

(h) Because the waste of time, when punctuality cannot be insisted on, is prodigious—a waste which naturally falls most hardly on the keenest Volunteers.

The importance of these considerations lies in the fact that they are *inseparable from any Voluntary system*. They follow on human nature and no organisation will do more than affect the degree to which these defects obtain.

The excellence of Railway Corps cannot be cited in support of the present system, for they are not Volunteers at all. Railway servants do not volunteer—they accept, quite naturally, the obligations of Drill and Musketry because appointments in that service are not obtainable otherwise.

I would like to add one more to the apt quotations given in Captain Hawkins' article. It was contained in a paper in one of the Service Journals and, if my memory serves me aright, was to the following effect:—

"The nation must depend on the patriotism of its citizens, but it must be the patriotism of forethought, prudence, and preparation not the emotional sentiment aroused when the enemy is at the gate."

Is the patriotism of the nation's citizens as displayed in the Volunteer movement one of forethought, prudence or preparation? It cannot be so described when modern requirements are taken into consideration. The number of those who ignore their civic duties in this particular is evidence enough that active patriotism to the required extent is lacking, and I maintain that, however galling the confession may be to our national pride, the situation should be honestly and squarely faced. Only then shall we cease propping up a rickety structure and commence the formation on solid foundations of a system suited to our national needs.

The feeling is growing apace that no satisfactory solution of this vital question will be found short of a system of Compulsory Training, and it is time that those who hold this view should abandon a passive attitude and take an active part in educating the nation to the acceptance of a system which, when shorn of its illusions, has no real terrors. The National Service League, of which Lord Roberts is President, is an instrument ready to the hand of every citizen—whether soldier or civilian. The demand for Compulsory Training must come from the civilian public and it is only by means of organised effort such as this League provides that an united expression of opinion can be given—one, that is, to which Government can respond with confidence.

The chief opposition may be expected from some of those who have not been Volunteers and from those employers who tell themselves that their abstention from active encouragement will not prevent the enthusiastic few from protecting their lives and property on the occurrence of trouble so serious as to necessitate the withdrawal of the natural protection of the Regular troops. To such opposition no attention need be paid, for if Compulsory Training has any drawbacks, on them lies the chief responsibility. From many non-Volunteers support may be looked for, since in justice it must be stated that many have been deterred from joining or have left the ranks on account of the inherent and disheartening defects so apparent in the system. This is, at least, better than mere apathy. It is significant that the keenest advocates of Compulsory Training are to be found amongst Volunteer officers, who must, from the circumstances of the case, be the best judges of the difficulties and defects attaching to the Volunteer system. Opposition may, however, be found in the ranks of Volunteers themselves. A section may stand up in defence of a system which, with all its defects, has been productive of very tangible results in time of war, and has at all times called forth much self-sacrifice and other good qualities. To such opposition every respect must be paid, but, if it occurs, it will be found to come from corps advantageously situated or circumstanced. Under existing circumstances it is dangerous to localise and these should remember that mere drawbacks in their case may become, under less favourable circumstances, paralysing defects.

Compulsory *Training* (not *service* be it noted) will mean that the present waste of time, money, and effort will be concentrated into a thoroughly effective expenditure of all three, will provide real instead of nominal efficiency, and will add many thousands of reliable men to the firing line. If at the same time it releases from the ranks those earners of capitation who are physically unfit to bear the burden of a day's march who will say that that is no benefit? Future generations would be weighted with fewer such.

The reports on Railway Corps as contrasted with purely Voluntary Units indicate to some extent the improvement in efficiency obtained by compulsion and without the same waste of time. The high standard of efficiency of the Behar Light Horse, too, where most managers compel their assistants to become members is well known, and this despite the fact that the members are scattered over a very wide area. The presence at the same time of excellent *esprit de corps* would seem to indicate that compulsion weighs, in either instance, but lightly on those concerned.

To those who prate of Jingoism, Militarism, Conscription or any of the other misapplied terms now utilised for the evasion of civic duty, the answer, even apart from inaccuracy, is easy. Far-seeing nations provide themselves with sufficient defensive material to warn off their enemies, actual or potential, and only malevolence can pretend to discover in such a course a desire to institute wars of aggression. Fear of being called hard names has never yet been

deemed an adequate reason for neglect of duty, whether in a nation or an individual.

Still more absurd is the cry that the nation is free and must not be compelled. Every Briton ought to know that the nation cannot be compelled but it can, and the conviction is growing that it eventually will, voluntarily assume in its own defence the obligation of universal military training, just as it has accepted amongst the necessary burdens of citizenship service on juries, payment of taxes, and submission to all laws enacted for the benefit of the nation at large.

I will not enlarge on the still broader view of the matter, the improved national physique to be looked for and the resulting increase in the industrial efficiency of the nation, valuable as such a consideration is. Nor is it necessary to consider the very special reasons which render the military training of every European in India a matter of such vital importance. These must be obvious even to most of those who, by abstaining from becoming Volunteers, decline to accept the logical conclusions to which these reasons lead.

THE CONDITION OF VOLUNTARY MILITARY SERVICE IN INDIA.

BY CAPTAIN A. GARDINER, R.E., AND OUDH AND ROHILKHAND
RAILWAY VOLUNTEER RIFLES.

The publication, in the January number of this Journal, of Captain Hawkins' article on the condition of voluntary military service in India having happened to coincide with an outbreak of that lawlessness the anticipation of which in some degree is the original *raison d'être* of the Indian Volunteer Forces, it is to be hoped that his explicit exposition of the main difficulties under which the Forces labour will succeed in attracting at least some of the attention it assuredly deserves.

I cannot as yet claim as lengthy a connection with the Indian Volunteers as Captain Hawkins does. I have however now served with them on and off since 1894, and, with such experience as this gives me, cordially support his declaration as to the excellency of the material were the Force but taken, at one and the same time, reasonably and seriously by the Military Administration of the country.

Captain Hawkins has written as one of a corps consisting mainly of Volunteers in both deed and name. I write as one of another, the rank and file of which are compulsorily Volunteers. The anomaly applies to most of the Railway Battalions and has two definite results:—

- (i) The men being employés of one administration and, under their permanent officers, discipline can be maintained on more or less ordinary lines; and "efficiency" being practically obligatory for all, any prescribed standard can, if cordially accepted by the Railway Administrations, be enforced, at least after the letter, as regards the great bulk of the men.
- (ii) That uncertainty as to the utility of the work has an even more deadly effect than ever. No longer simply amateurs, no longer free to throw the work up when their belief in its value vanishes, there remains but to treat it all as "eye-wash," to avoid as much as possible of the more tedious exercises, to aim chiefly at securing any fun that camp or field day may give opportunity for, and to damp down the military aspirations of the keener spirits.

Whatever else may be shrouded with doubt and uncertainty the *raison d'être* of the Force still, I venture to think, stands out clearly

the same as ever; *viz.*, as quoted by Captain Hawkins, that we are aliens in an alien land. Still, as ever, may conditions arise involving the withdrawal of the greater part of the Regular Forces, and their replacement by the Volunteers for the overawing of the disloyal elements that always exist among an Eastern people governed by a Western nation: still may an outbreak of rebellion or mutiny render it imperative that "every Englishman by birth or descent" shall be capable of taking his part in an organised defence of British rule.

Where paralysing uncertainty does come in is, as to whether there is the slightest chance or intention of any such organised use ever being really made of the Force, should either of these emergencies arise. This uncertainty exists in the minds of the Volunteers from several causes. Captain Hawkins has given us two:—One the almost universal lack of any friendly interest on the part of the local military authorities; the other that every Inspecting Officer, if he has any theory at all as to our rôle in war, has a different one. We have all of us heard each of the opinions on this subject that Captain Hawkins places in his list and many more. But the most serious cause of all perhaps is that many a Volunteer or would-be Volunteer knows that he cannot *possibly be made use of* on the lines of the present so-called training.

The abstention Captain Hawkins deplors of so many who could undoubtedly, if trained on proper lines, help to make the Force a really valuable one is, I am convinced, in the main due to this knowledge. The young civilian in a district for example is asked to become an officer, or it may be a "private" in the local corps. He knows that as such he will be required to put in nine "drills" per annum under conditions varying from a half hours' *tête à tête* with the Sergeant-Instructor to a parade of possibly fifty to a couple of hundred men. He can ill-afford the time, he is probably more or less shy of playing at soldiering, and he does not believe that in return for the trouble and unpleasantness that he anticipates, he will learn a single thing of any real value. He knows perhaps that he will become nominally liable upon the calling out of the Force for service anywhere in his Province, whereas as a matter of fact his duty will, as far as can be foreseen, involve his remaining where he is and continuing to carry out his ordinary duties, quite possibly, if his work is successful, throughout the whole period of mobilisation. In a country where the respective seniority of each man is both known and real, and being based upon the responsibility of the daily work, cannot possibly suddenly disappear within the community itself; in the presence of emergency he will probably be supposed in just such an emergency to place himself under the orders of one whom he knows in reality will still be looking to him for direction and guidance. The Treasury Officer, according to his training, is to turn "private" let us say, and entrust the safeguarding of his charge to some other, quite possibly even less of a soldier than he is, and so on; the examples might be many. Little wonder that there are absentees

under influence of such considerations as these ! Little wonder that too many of those over-persuaded or pressed to join are undesirable in every possible way : contemptuous of a discipline that a temporary superior cannot enforce, and unwilling to take seriously even such teaching as is within their reach.

I have attempted to explain one at least of the reasons often given by individual non-Volunteers and by more or less unblushingly useless individual nominal Volunteers. Namely that in time of the emergency the Force primarily exists to meet, the proposed organisation cannot be expected to work. The Railway Volunteers as a whole body are in little better plight. Training attempted solely as riflemen, the common answer of the Regular Officer to an inquiry as to their rôle on mobilisation, is—to defend with their rifles either the railway stations, blockhouses and bridges, or their own homes. Sometimes garrisons for Armoured Trains are suggested, or Railway patrols. And in all human probability under neither of the conditions given as the *raison d'être* of the force will a single man be available for any such duties ! A great war on the frontier denuding India of her Regular Troops would make far too heavy demands on the Railway staffs to leave many worth the having over for garrisons of posts or trains : rebellion, involving most certainly defalcations among the native staff, would even after abandoning the less important branches leave still fewer. We most of us realise this. We often explain it to those with whom we come in contact. But nothing is changed.

Is then a large section of the European community in India unfitted by reason of its civil duties to take any share in the retention by the sword of the Indian Empire ? By no means ! But you must take your man as you find him, ascertain what his civilian duties are, how they will be effected by the emergency that it is desired to prepare for, and in what way they can be turned to military use. Revert again to the District Civilian. Highly educated, with a knowledge of the vernacular equalled only by officers of the Indian army, and a personal acquaintance with the inhabitants and topography of his district equalled by no other white man in the country—surely you can make something more of him than a nine-days' drilled private, or a scarcely more possible company commander in the So and So Volunteer Rifles. You have some of the main essentials of a guide and an Intelligence Officer, not as the result of amateur learning, but of professional every day work. Teach him the rest. He understands maps. He can read your military sketch as well as you can. Teach him how to prepare one for you under the conditions of war. Teach him what roads are good, how to recognise positions for defence, how to see without being seen, what to look out for and how to report it. Do not have a company 120 miles away waiting for a Captain who cannot come ; but enlist him in a special section or company of the local Corps of "Frontier's men," or "Guides," or "Officers Reserve." Let the senior present, according to their civilian grades, always take command when they come

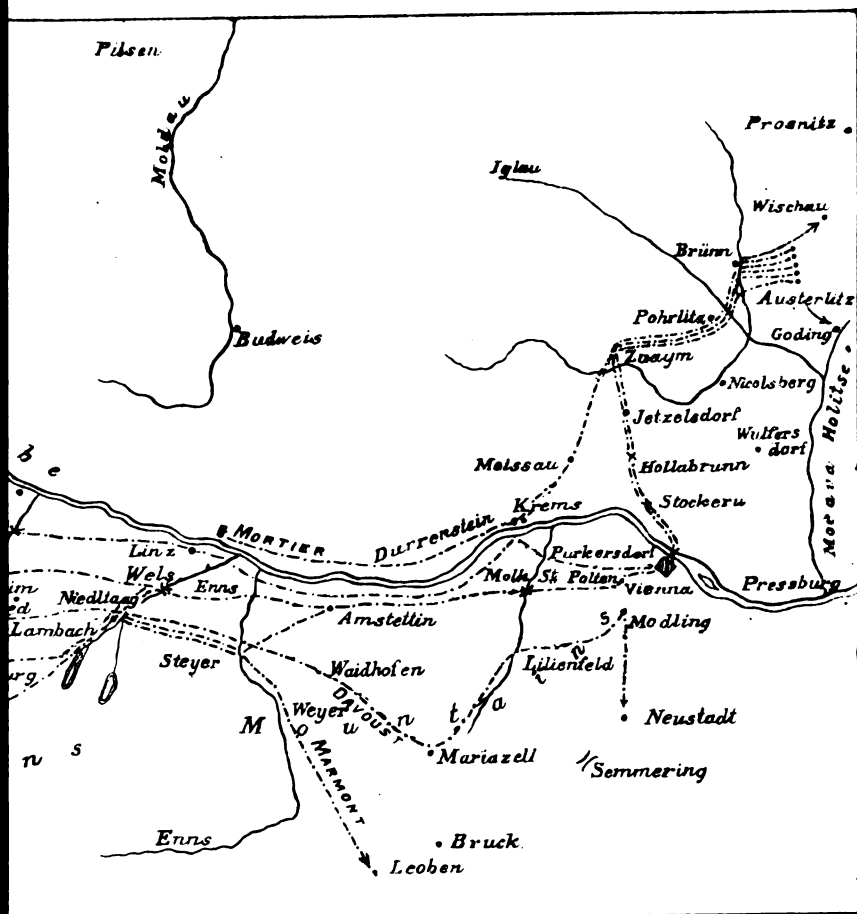
together for training. Let their special duty be intelligence. And then *really* teach him. Explain *why* a knowledge of at least Infantry Drill and Combined Training is essential for the carrying out of his duties in time of national emergency. Above all let him clearly understand what will then really be expected of him ; and how he is to carry out those duties concurrently with any civil work that remains to do. When his district is the scene of regular manoeuvres let him take his part to such extent as his circumstances admit. He may not have much time to devote to it, but still let his part be systematic. Apply to him for information, see what he knows, and give him every opportunity to learn more. Your safety may depend on his intelligent co operation one of these days! Year by year let his progress be taken due note of and be reported to his civil chief as well as to the military authorities concerned. Nine skylarking drills will not effect much. It means more work no doubt—drills, study, lectures from regular officers, and manoeuvres. But the Indian Civil Service has probably a bigger stake in the country than any other service in India : convince him that he is really aiding in its defence, and I cannot believe either that he will still hang back, or that his civil chiefs will continue to look with indifference on his work as a Volunteer.

Then to pass on to the case of the Railway Corps. It is impossible to imagine a state of affairs in which it will be desirable for the European Railway staff to throw over their railway duties and march about the country as Infantry Battalions. It is quite possible to imagine circumstances under which it will only be practicable to keep the railways open under the conditions of war in which the native staff or large sections of it will have struck work and be hostile : in which as an extreme case it might even be necessary to close one of alternative routes and order its staff to move bodily to assist in maintaining the other. Such things cannot be done by civilian staff under civilian administrations. They can be done by units of Military Engineers. Your railway man can never make really first class infantry ; were he ever so efficient he could never be spared to work as such ; he *is* a Railway Engineer ! (as the Army understands the word), make him a Military one ? Change your Railway Volunteer " Rifles " into Volunteer Railway Engineers. The keen men on drill (and there are lots of them) in the present corps need not fear the change ! It will not mean any less drill, there is none too much of that as it is. But it does mean, in addition to drill, some acquaintance with fortification ; it means spreading the knowledge of how to rapidly repair damaged bridges and way, which is possessed as a matter of civil working by but one of many departments of the Railway ; it means teaching the men how to rapidly improvise armoured trains and how to handle them ; how best to move ordinary traffic (troop trains and munitions of war) across danger zones ; and all other Railway operations in war. The Railway Volunteers will not be available to garrison stations and bridge-heads ; they will be available to direct the placing of their stations in a state of defence

or the construction of block-houses and bridge-heads, by working parties of the local Volunteers, on schemes that should have been worked out and practised during the years of peaceful training. The Railway Volunteers will not be available to garrison armoured trains, to have let us say a company of irreplaceable skilled men wiped out at once in some successful wreck of the train: they will be available to run the train and to supply the essential working parties, under the escort of Regular or Volunteer Infantry, for the repair of damaged line. Only it is not what he is being trained for to-day and the result is—cooly corps to do the digging and carry sodas! It is a myth that the Eurasian staff will not work. It does not “come with the grain,” he needs encouragement no doubt: but given that and a fair share of tact and personal example, and above all some real definite object made clear to him to work for, and the justly derided need for an attendant cooly to do the real work will disappear. The Oudh and Rohilkhand Corps can run out permanent-way by armoured train, unload, lay, pack, dismantle, and reload cheerily and well without a cooly on the ground; and what one can do others can do. The motive at present is lacking; and for this the Volunteers are not to blame.

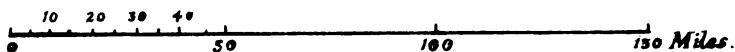
As regards some of the corps in India there is little to complain of either in respect to their being suited to their organisation, or to the possibility of using them when the time comes. And in proportion to this suitability will usually be found their keenness and efficiency. The first need of the European merchants and tradesmen of the residency towns will be to defend their ports, and through the ports their businesses. As a result, Port Defence Volunteers, Artillery Volunteers, and so on, with men whose drills run into hundreds per annum. The Planter and many another riding Englishman in India is an almost ready made Light Horseman. Hence corps of Light Horse equal to any Volunteers anywhere. And there are thousands of men in the country and hundreds in each of the various Provincial Rifle Corps, who are perfectly suited to form Volunteer Infantry and serve as such in time of need. What is required then, as Captain Hawkins has pointed out, is a higher standard of efficiency, and greater interest and help from the Regular Army. The Regular Army expects much from the Volunteers: it is very ready to scoff and deride when what it expects is found not to be there: it forgets that what the Volunteer has given, whether it be little or much, is almost entirely out of his spare time, after a day's work (taken on a yearly average) far harder than the soldiers: that he gets nothing individually for what he gives, as a rule not even credit: and that the Regular Army gives practically nothing in return. A lump sum grant: an Adjutant who has seldom taken up the appointment solely out of love for the Volunteers: an annual “General Inspection” and an Inspector-General who is not, with things as they are, in a position to insist upon any real improvement in efficiency. Let the Army take a livelier and kindlier interest in the local detachments of Volunteers; let its officers in *their* spare time help the Volunteers at their weekly exercises;

encourage their officers to really learn something of how to do it ; help them tactfully with advice and men in suitable small schemes, and umpire the carrying of them out ; and finally make the O. C. Station ultimately responsible through the Inspector-General of Volunteers for the state of the local companies or detachments ; and the number of drills per annum will rapidly increase of themselves to something far beyond nine !



BLITZ

Scale about 45 miles to 1 inch



THE CAVALRY OF THE GRAND ARMY IN 1805.*

BY CAPTAIN G. M. ORR, 11TH LANCERS.

The name of "The Grand Army" was first given by Napoleon to those corps which he assembled on the Rhine and the Main in September 1805 for the invasion of Austria, and which carried the same organisation through all his campaigns to the end of 1812.

Previous to 1805 the principal French Army had been that which was employed on the Rhine—the Army of the Rhine as it was called—and it had always been organised in detachments, complete in every branch of the service. In 1800 when Moreau was in command of it, its numbers were 82,000 infantry, 18,000 cavalry and 5,000 artillerymen with 116 guns; he divided it into four corps, under Lecouch of 25,000, St. Cyr 25,000, St. Suzanne 20,000 and the fourth of 30,000 he commanded himself but not as a reserve corps. Each corps was complete in infantry, cavalry and artillery, and was thus able to act by itself, under whatever circumstances it might be; a system which though it tended to develop the talents of the commanders yet had the inconvenience of leading corps to separate too readily and to act by themselves; which they were apt to do without considering the general object of their chief, especially if he happened to be not strong enough to enforce their co-operations to a common end. Napoleon adopted this organization to his own views of what was essential for an army, which was to be guided by one man; that is to say that although he divided his army into corps, each complete with infantry, cavalry and artillery, he only gave to each the minimum of cavalry and guns, the former being only as many squadrons as was needful to guard it safely, and the latter about 36 guns. He reserved to himself the completion of these corps in artillery and cavalry by the aid of the reserve of those two branches of the service, of which he had the sole disposal. He also, according to the nature of the ground or of circumstances, withdrew squadrons or guns from one corps to give to another. But the most striking difference between Napoleon's organisation and that of former armies was that he kept to the practice of retaining under the same command and in immediate dependence on his own orders the principal mass of cavalry. It was he who, first of all commanders, saw that it was with this arm that an enemy is watched by going incessantly round him; that his defeat is ensured when he is shaken and that he is pursued and cut off when in flight. Thus in the strategical stage of operations when his corps

* The books consulted for the purposes of this narrative were :—

Thier's "History of the Consulate and Empire."

Alison's "History of Europe."

Von Wartenburg's "Napoleon as a General."

were probably widely separated, the cavalry attached to the corps afforded them local protections and maintained connection; while the bulk of the cavalry formed a screen well in advance, with the additional duty of obtaining information and early intelligence of the enemy and transmitting it to him.

The independent cavalry of the Grand Army was under the command of Murat, then 34 years of age; indeed the only commander of a division over 50 years of age was Hautpoul. This force comprised—

The cuirassiers of Nansouty	}	...	...	6,000
The carabineers of Hautpoul				
The dragoon divisions of Klein	...	...	2,500	
Walther	...	...	2,500	
Beaumont	...	...	2,500	
Bourcier	...	...	2,500	
Baraguey	...	...	5,000	
				<hr/> 15,000
Horse artillerymen	...	...	...	1,000
				<hr/>
	Total	...		22,000

Of these the 5,000 under Baraguey did not receive horses until after the capitulation of Ulm. This arose from the fact that when Napoleon was forming and organising the army for the invasion of England he had not considered it necessary to obtain horses for all his cavalry and he had allowed the dragoons to remain dismounted since, as they could serve on foot or on horseback, they would embark only with their saddles and obtain horses in England, thus doing away with the necessity for providing for their transport.

The light cavalry of the army which was attached to the infantry corps, and the cavalry of the guard numbered altogether 16,000; and, as they were to start with seven corps, including the guard, this would give an average of about 2,300 per corps, at the commencement of the campaign.*

It is in the use to which Napoleon put his independent cavalry in the first campaign, on which he entered in command of a really large army composed of a number of corps, which is of special interest to us; we will endeavour in the following pages to show what Murat's cavalry had to do from September to December 1805, telling only sufficient of the general operations to render the narrative intelligible.

Prior to issuing orders for the march of his corps to the Rhine, Napoleon had sent the chief of his cavalry, Murat, and two of his aides-de-camp, Bertrand and Savary, across the Rhine, in order to carefully inspect the country in which the campaign was to take place; they were to explore all the roads from the Rhine to the Danube, observe their nature, the military positions; they might find the means of sustenance which the country afforded, and all the points where the Danube might be approached and crossed.

* These numbers are taken from Thiers.

The country, in which the cavalry were to play such an important part and which lay between the Rhine and the Danube, consisted of a chain of mountains, not lofty, separating the two rivers, turning the Rhine to the north and the Danube to the east. These mountains have their steeper sides towards France inclining on the other side of their summits insensibly towards the plains north of the Danube at Donauworth.

Towards the Rhine on the west and the Main on the north, the hills are partly open and partly covered with forests, known generally as the Black Forest; the reverse side towards the Danube is nearly naked of wood and is terraced. The principal defiles by which these mountains may be traversed from the banks of the Rhine south of Strasburg to the sources of the Danube are the defile of the Kinsig running south-east from Strasburg and Val d' Enfer by Brisach and Friburg. From between Strasburg and Mainor the main routes leading to the Danube between Ulm and Ingolstadt were—

- (a) Carlsruhe-Pforzheim-Stuttgart-Donauworth.
- (b) Speyer-Heilbronn-Hall-Elwangen-Nordlingen.
- (c) Maunheim-Heidelberg-Dinkelsbühl-Neuburg.
- (d) Mainy-Warzburg-Anspach-Ingolstadt.

On the 25th September, the independent divisions of cavalry crossed as follows:—

Nansouty near Maunheim to Heidelberg.

Klein near Speyer to Bruchsal, to cover Soult's crossing.

Bourcier at Kehl and then north to cover Ney crossing at Pfory.

Beaumont at Kehl and then to Offenbourg.

Hautpoul also at Kehl and then to Oberkirch.

Walther at Neu Brisach to Friburg. Baraguey followed Walther with his dismounted dragoons.

Having thus crossed, Murat's divisions pushed into the defiles of the Black Forest; by this manœuvre they both covered the passage of the various corps, destined to edge away to the north, and at the same time induced the enemy to believe that Napoleon's advance was a frontal one on to Ulm. Murat's orders were to be careful not to commit himself and to gradually cause his divisions to converge *via* Stuttgart on to the plain round Nordlingen about 6th of October. He was supported by Lanne's corps which marched on the road Kehl-Offenbourg-Tübingen, thus, in addition, forming a right flank guard to the army. On the 6th October while Napoleon's corps stood on the line Weissenburg-Nordlingen-Heidenheim, Murat's cavalry divisions of Walther, Klein and Beaumont were near Donauworth in a position to cross by the bridge of Munster which had been secured by Vandaunne's infantry divisions and Soult's corps. Bourcier, with Baraguey's dismounted dragoons, was at Geisslingen.

Hautpoul had fallen back as rearguard to Bessieres who was at Aalen while Nansouty was in rear of Soult at Nordlingen. The next day Murat crossed at Munster and seized the bridge of Rain over the Lech, while Hautpoul moved up to Nordlingen and Nansouty arrived in front of Donauworth. Bourcier and Baraguey moved to Heiden-

heim to support Ney's corps which was remaining in the vicinity of Ulm to cover the crossing of the river. On the 8th Murat turned back from Rain towards Wertingen, being joined by Nansouty's cuirassiers and Lanne's corps. On the march they came unexpectedly on a force of Austrians under Auffenberg; 200 dragoons were at once dismounted by Excelmann, one of Murat's A.D.C.s, afterwards to distinguish himself in command of one of the cavalry corps under Grouchy in the Waterloo Campaign, and with them he cleared the small hamlet of Hohenreichen in front of Wertingen, only to find a large force of Austrian infantry formed up in squares. On the remainder of the cavalry coming up the squares were charged, but no impression was made on them until Oudinot's division of grenadiers from Lanne's corps arrived; then surrounded on all sides the Austrians were entirely dispersed, leaving 2,000 prisoners and several stands of colours and guns. Murat after this action continued with his cavalry ahead of Lannes to Bargau, while Ney advanced up the left bank to secure the bridges in order that the corps could act on either bank of the river; meanwhile Soult had been directed from Augsburg to Landsberg and Memmingen; during this march Thiers relates that the 26th chasseurs of Soult's corps did not dread to try their strength against the Austrian heavy cavalry and captured an entire squadron with two guns, such was the ardour of the French troops. During these days Marmont's corps was brought to Augsburg where was Napoleon with the guard, while Davout and Bernadotte, to whom Hautpoul's cuirassiers had been sent, watched the advance of the Russians from the side of Munich. Murat was now given the command of the corps of Ney and Lannes and by his orders two of Ney's divisions were brought over to the right bank at Gunsberg, leaving only Dupont's division of infantry and Bourcier's dragoons on the left bank, but there were also to the north-west of Pupint, Baraguey's dismounted dragoons which proved a valuable support to him on the 11th when he met the greater part of the Austrian army at Albeck. On the 14th Napoleon ordered Ney to make his attack on the bridge and convent of Ebhingen; it was in the course of this fight that the 18th dragoons distinguished themselves by charging an Austrian square so vigorously that they broke it and the Austrians threw down their arms. When Napoleon heard that the Archduke Ferdinand and Werneck were endeavouring to escape northwards, he sent Murat with his cavalry, supported by the divisions of Dupont and Oudinot, in pursuit. Murat starting on the morning of the 16th caught them up and caused Werneck to surrender near Nordlingen on the 18th, and then, continuing in pursuit of Ferdinand, caught him up beyond Nuremburg on the 20th and captured and dispersed most of his force, though the Archduke himself escaped with a few hundred horsemen. In this pursuit Murat's cavalry took 12,000 prisoners and 120 guns. On the 20th Mack hemmed in by Ney and Lannes on the north, Marmont and the guards on the east, and Soult on the south, surrendered in Ulm with 30,000 men.

Von Wartenberg in describing the use to which Napoleon had put his cavalry says: "This employment of the cavalry may be called masterly. It is indeed a characteristic, uniformly noticeable in the strategy of all the greatest generals, that they knew how to utilise their cavalry to the best advantage. For it is this arm, designed for a wide field and rapidity of movement, which requires superior officers of exceptionally large grasp and quick resolution, who, keeping only the great aims of a war in view are able to set aside objects of secondary importance and to put up with heavy losses also, for cavalry employed over a large area must often get into situations from which it cannot withdraw without suffering severely. Napoleon himself said: 'The use of cavalry demands boldness and ability, above all it should not be handled with any miserly desire to keep it intact.'"

Immediately Mack had surrendered on the 20th of October, Napoleon issued orders for his corps to concentrate on the Isar with the view to advance against the Russians, who with the remnant of the Austrians were on the Inn. On the 26th of October we find Lannes' corps on the left at Landshut, Davout in the centre near Hohenlinden, Bernadotte on the right at Wasserburg on the upper Inn. Soult was on the march from Munich, at which place Marmont and the guards were with Napoleon; Ney was just leaving Ulm and Augerau had crossed the Rhine. Of the cavalry Walther, Beaumont and Hahtpoul were at Hohenlinden under Murat. Nansouty was with Lannes at Landshut, whither Klein was on the march from Ingolstadt. Bourcier was at Augsburg, Baraguey, with his dragoons at last horsed, at Ingolstadt covering the left flank of the general forward movement. Murat led the advance closely supported by Lannes on the road Mühldorf-Altheime Ried Lanbach, at which place the Austrians were driven across the Traun, whence they retreated with the Russians behind the Enus. Murat now inclined to the left *via* Enus to Amstetten followed by Lannes and Soult. At Amstetten on the 5th November Murat's cavalry came up with Kutusov's rear guard but was unable, though supported by Oudinot's division of Lannes corps to defeat it. On the next day Napoleon formed a new corps under Mortier to march along the left bank of the Danube, connected with the right bank by a flotilla of boats. Mortier had under his orders the divisions of Gazau from Lannes corps, of Dupont from Ney's corps and of Dumonceau from Marmont's corps, as well as the cavalry division of Klein. The Russians having retreated from Amstetten, the forward movement was continued until, on the 9th November, Murat at the head of the main column appeared in front of St. Polten. It was on this day that Kutusov crossed over to the left bank, but Murat was directed to move on Vienna and not follow Kutusov; at the same time Murat was warned not to outstrip the infantry corps but to keep ready and massed. Napoleon considered that disobedience to these instructions was the cause of the disaster which befell Mortier in the defile of Durrenstein, through him being left isolated on the left bank by the too forward move of Murat on Vienna, drawing with him Lannes and part of Soult's corps. On the

12th, however, Murat and Lannes were ordered to press on to Vienna and capture the great bridge over the Danube. As soon as this was effected Murat was immediately directed to push forward with his cavalry on the roads to Meissau and Brünn supported by a couple of divisions of infantry, with the object of cutting off the retreat of Kutosov into Moravia.

On the 13th November Murat himself was at Stockerau at the junction of the roads to Meissau and Lnaym, with his cavalry on the Lnaym road, Lannes being half a day's march behind him. On the same day Kutosov started from Kreom in the direction of Meissau and on the morning of the 15th sent Bagration with 6,000 to Hollabrunn to block the road to Lnaym, so as to allow him to reach Setzelsdorf before Murat. When Murat found himself opposed by Bagration on the afternoon of this day, he thought the whole Russian army was in front of him and, as he only had one division of Lannes' corps besides his cavalry, he considered that he had better temporise with the Russians and try and keep them in their position until more forces came up. It does not speak well for the reconnoitring capabilities of the cavalry of the day that so large a force was unable to discover that that enemy opposed to them was only 6,000 strong. Nothing could have been more opportune for the Russians than this delay as Kutosov was able to concentrate his force at Setzelsdorf and commence his retirement along the Lnaym road.

In the afternoon of the 16th Murat, now reinforced by Soult's three infantry divisions, received peremptory orders to advance and attack the enemy. Bagration stood his ground and a most sanguinary combat ensued until midnight, when he broke through the French with the remnant of his men. The next day Murat with the cavalry divisions of Nansouty, Hautpoul and Welther reached Lnaym, followed in the night by Soult's three infantry divisions, the guards and Caffarelli's division. Of the remaining cavalry divisions, Bourcier was on the march to Vienna, Baraguey was scouting in the direction of Pilsen, Beaumont was with Davout keeping the road from Vienna to Brünn clear, and Klein was watching the south-eastern frontier of Bohemia towards Budweis.

Von Wartenberg aptly points out that this distribution of the cavalry, as well as its whole handling up to this time, showed clearly that the Emperor, when forming a large "Cavalry Reserve" by no means intended to drag it along with him as a closed-up mass, in order to use it on the day of battle only, but that he expected from it the most far-reaching reconnaissances, while the rest of the cavalry, which had remained under Murat's immediate orders, had uninterruptedly formed his van guard since his departure from the Inn.

On the 17th Kutosov was joined at Pohrlitz by the Austrian corps which had retreated north from Vienna by the road through Wülfersdorf at which place they had been overtaken by Milhaud's chasseurs in whose hands they left 190 cannon. On the 20th he had effected his junction with the 2nd Russian Army under Buxhowden at Prossnitz. On this day Murat faced the Russians and Austrians at

Wischau : during the next few days while the armies halted, Klein was recalled from Bohemia to take Bourcier's place at Pressburg, while the latter was ordered up to the front. On the 28th when the Russians and Austrians took the offensive, Napoleon ordered up both Bourcier and Klein to Brünn, at the same time he sent orders to the corps of Davout, Bernadotte and Mortier to hurry up by forced marches, for the great battle that he foresaw would take place in the next few days.

It was during the pursuit of Kutosov that Napoleon, when writing to Lannes, who was with Murat said: "I do not wish the horses to be spared if they can catch men."

Napoleon's dispositions for the forthcoming battle—the first great Napoleonic battle—are interesting. On the extreme left was a mound which was entrenched and a regiment of infantry with 18 guns were placed there in position to form a point of support to the left of the army: Lannes occupied both sides of the road running near it from Brünn to Olmütz with the divisions of Suchet and Caffarelli. As the level configuration of the ground in this portion of the field led Napoleon to foresee that an engagement of cavalry was inevitable he placed with Lannes the cavalry of Murat, comprising the cuirassiers of Hautpoul and Nansouty, the dragoons of Walther and Beaumont, and also the chasseurs of Milhaud and Kellermann taken from the corps to which they were usually attached. In the centre, opposite the villages of Girzikowitz and Puntowitz on the Goldbach stream at the foot of the slope to the heights of Pratym, he placed the divisions of Vandamme and St. Hilaire of Soult's corps; a little further off, behind the marsh of Kobelnitz and the castle of Sokelnitz, was Soult's third division of Legrand reinforced by two battalions of Tirailleurs and Margaron's light cavalry brigade belonging to Soult's corps. Five miles in rear of the extreme right was Friant's division of Davout's corps destined to advance to Telnitz: with this division were six regiments of dragoons under Bourcier.

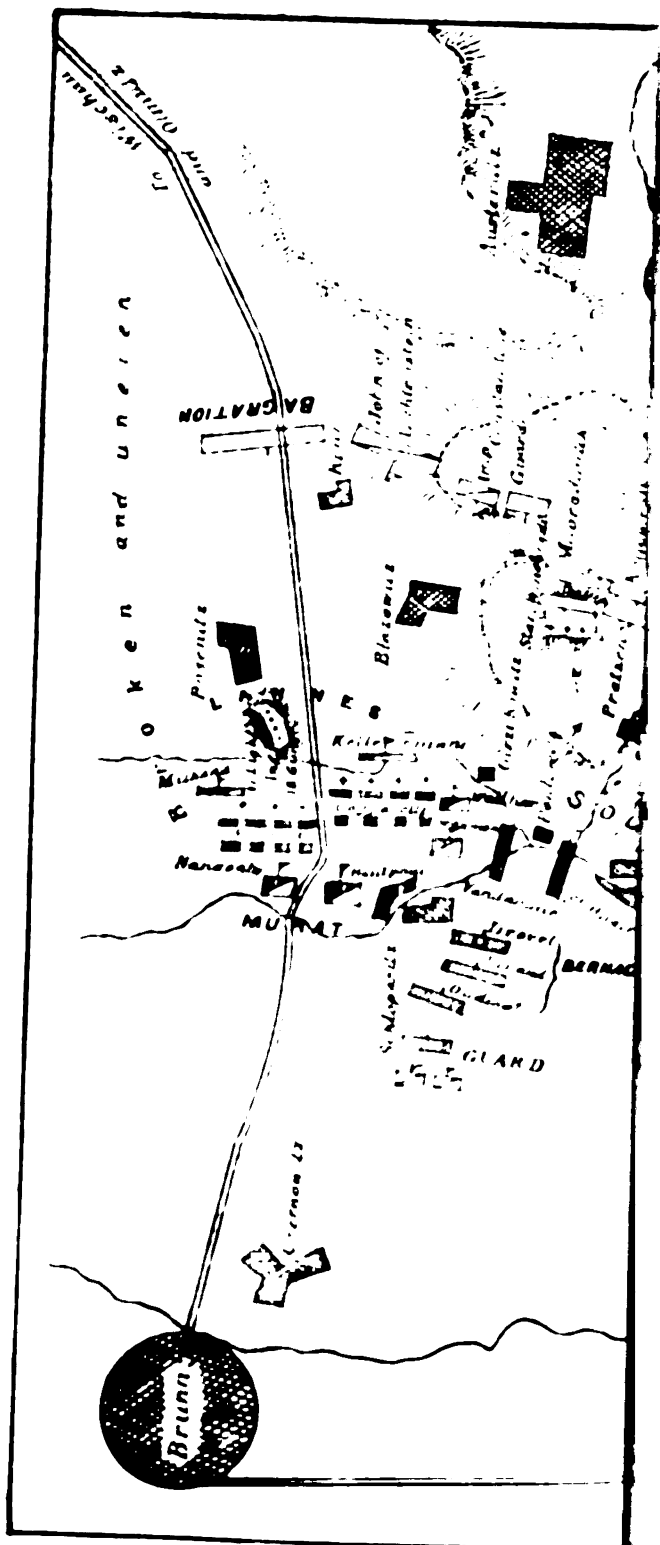
Behind Soult and Lannes he kept in reserve Oudinot's division of grenadiers, the divisions of Drouet and Rivaud of Bernadotte's corps, and the Imperial guard. Thus having ten divisions of infantry Napoleon placed six in line and kept in reserve a mass of 25,000 out of the 70,000 available. The cavalry under Murat was about 6,000 strong to which may be added 3,000 more for Milhauds' and Kellermann's light cavalry, an effective force of 9,000 or 10,000 cavalry. On the right Bourcier had about 2,000 and Margaron probably 1,000 if not more; and there were several other regiments of light cavalry with Soult and Bernadotte, besides the cavalry of the guard. The battle began by the Russians advancing in strength against the French extreme right, and here before the arrival of Friant and Bourcier, the light cavalry of Margaron had to meet the charges of a mass of 14 squadrons of Austrian cavalry which they were unable to sustain, however the 1st regiment of dragoons coming up ahead of Friant's division at a gallop drove the Austrians and Russians back into the Goldbach: later when Friant's division became desperately engaged

round Tilnitz and was being taken in flank by fresh columns of the Russians from Sokolnitz, the situation was only saved by the repeated charges of Bourcier's dragoons. Meanwhile Soult had advanced against the heights of Pratym and established himself there. But while the French right thus disputed the line of the Goldbach with the Russians and their centre took from them the level of Pratym, Lannes and Murat on the left were fighting with Prince Bagration and all the cavalry of the Austro-Russians, comprising 82 squadrons. Lannes' divisions were drawn up in the following manner: the artillery and light cavalry of Milhaud and Kellermann were in front, the first line of infantry was composed of deployed battalions, the second line of battalions in squares, the heavy cavalry of Nansouty and Hautpoul were arranged in several lines in rear as a reserve, and the dragoons of Walther and Beaumont were on the right upon the plain. After describing this formation Dumas in his history says: "Thus if a charge of horse, which was frequently the case, broke the first array, it passed while disordered by success through the intervals between the squares behind the first line, from whose front and flanks it sustained a heavy fire; if they escaped that, the horsemen were suddenly assailed, when blown and dispersed, by a solid mass of heavy cavalry in the rear, which never failed to hurl them back in confusion through the squares, who by this time had reloaded their pieces and whose flanking fire completed the destruction of their assailants." This was the formation prescribed by Napoleon for his infantry divisions to meet the charges of a mass of cavalry.

When Lannes advanced Caffarelli's division was charged by a mass of Russian cavalry. Kellermann, who with his light cavalry was in front of this division, drew back his squadrons to let the Russian cavalry pass through the intervals of Caffarelli's infantry and then seizing his opportunity when the Russian horsemen were in disorder from the infantry fire, he charged them vigorously: a fresh number of Russian squadrons, coming to the succour of the first, were met and dispersed by the dragoons of Walther and Beaumont. Later on after Lannes had taken Blazowitz and, pressing on, had thrust his corps between Bagration's infantry and the mass of cavalry, the latter resolved to make a last attempt and flung itself in one entire mass on Caffarelli's division, which received the charge with extraordinary firmness until the cuirassiers of Hautpoul and Nansouty, more than 4,000 strong, deploying to the right from behind the infantry, flung themselves on the Austro-Russian squadrons and sent them back shattered to Austerlitz. Hautpoul's division was then summoned by Lannes to the left where its charges against Bagration's infantry, already shaken by the attack of Suchet's division, put an end to the fighting on that part of the field. But on the tableground of Pratym the contest between Soult and the enemy's centre had been renewed, and Napoleon had to bring up his reserves. At the moment of their arrival one of Soult's battalions was being overwhelmed in some vineyards by the Russian cavalry of the guard, whereupon General Rapp, putting himself at the head of Napoleon's Mamelukes and

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horse-chasseurs of the guard, charged and broke the Russian Imperial cavalry, but he was attacked in turn by a second mass and driven back ; at this moment the French horse-grenadiers arrived at full gallop, led by Bessières to the succour of Rapp, and in turn charged the horse guards of the Russian Emperor and finally after a tremendous hand to hand struggle dispersed them. On their extreme left the Russians were now hemmed in by Napoleon and Davout against the lake of Satschau. Here the last cavalry action of the day took place ; the dragoons of Beaumont, borrowed from Murat and brought from the left to the right, charged Keenmayer's Austrian cavalry who were endeavouring to cover the retirement of the Russian left. In the confusion that ensued round the pools of Satschau and Menitz the French cavalry made 3,000 prisoners and took a number of cannon. Napoleon was deceived after the battle as to the correct route which the fugitive army were taking and consequently sent the cavalry of Murat supported by Lannes along the Olmütz road ; on the following day, however, it was discovered that it had gone by the Hungary road towards the Morava. Davout's corps, now reinforced by the arrival of Gudin's division was at once despatched in this direction, headed by the dragoons of Bourcier and Klein, who by now had also arrived ; but on the 4th December the armistice of Holetsch put an end to the pursuit on the banks of the Morava. In this great battle of Austerlitz Napoleon's maxim on the use of cavalry on the battlefield was fully carried out :—"Charges of cavalry are equally useful at the beginning, the middle and the end of a battle. They should be made always, if possible, on the flanks of the enemy ; especially when this last is engaged in front" ; and again, after the battle :—"It is the business of cavalry to follow up the victory, and to prevent the beaten army from rallying."

There is indeed nothing to learn from our present training manuals that is not already in those maxims of Napoleon, or that cannot be learnt from a study of Napoleon's campaigns, though they are a hundred years old.

THE PRELUDE TO TSUSIMA.

Letters from Lieutenant Peter Alexandrovich Viruboff, torpedo officer on the battleship "Knyaz Suvoroff."

From the "Novoye Vremya" of 15th December 1906.

TRANSLATED BY MAJOR N. M. C. STEVENS, 81ST PIONEERS.

P. A. Viruboff perished on the "Suvoroff" at Tsushima. During the voyage of the 2nd Squadron he wrote to his father, posting his letters at various ports, and on vessels they met. All told, he sent 13. These simply written letters are of interest as an echo of the Tsushima tragedy, and as the voice of one, who, a witness of the ruin of the Russian fleet, refused to survive it. The first was written at Vigo; and tells of events already well known, *viz.*, the first days of the voyage, and the Doggerbank incident. It is therefore omitted.

II.

ATLANTIC OCEAN :

23rd October 1904.

I write on our way from Tangiers to Dakka, a port in French Senegal, where we hope to arrive the early morn of the day after to-morrow. In Tangiers I had only time for a postcard; so I will now take up my tale from Vigo.

We were heartily sick of the ways of that worthy Spanish port, which were too much like those of ours at Home. In the end, however, all went well. On the 14th the Spaniards let us have 400 tons of coal per ship, and the morning of the 15th we loaded to our full capacity. Rojestvensky was in constant and busy communication with London, St. Petersburg and Madrid.

Reports were gloomy and we feared most an upset from our own good diplomats; and that we might have either to disarm or to return to Libau. Happily we were spared this. Things dragged on till the 19th October, when to our joy we weighed anchor at 7 A.M. and sailed for Tangiers to join the rest of the fleet. On the 16th arrived the long-looked-for cold storage steamer "Esperance" with meat and other provisions for the squadron. She did not enter the bay, but dropped anchor outside Spanish waters. There was £15,000 in gold on board her for us, and I had to go out for the money in a torpedo boat—not a pleasant job as there was a heavy ocean swell. From the "Esperance" we sighted a big 3-funnelled English cruiser making for Vigo. When we got back the cruiser was already at anchor. She proved to be the "Lancaster," one of the most up-to-date English armoured cruisers. She had evidently come in to see

what we were up to, though her Captain, when calling on our Admiral, said he had put in to Vigo merely for letters. As a matter of fact, after calling on the Admiral, the "Lancaster" put out at once to sea, and coming in next morning to receive our Admiral's return visit, went straight out again. All the time our wireless telegraphy kept recording English messages both cyphered and plain, amongst other things, there were many about the "Esperance." We had no doubt that an English squadron was quite close to us; of this we soon had visible proof. On the 20th, when going on the dogwatch, my predecessor reported that four cruisers, whose lights were visible from either beam, seemed to be escorting us, signalling each other and manoeuvring; they plainly had the legs of us, which made us sure they were all ships of the latest type. Amongst them was the "Lancaster"; she, once in the most truculent way came up nearly alongside us. At dawn we saw all four on the horizon. One of them, a huge 4-funnelled cruiser of the "Drake" class, flew a Rear-Admiral's flag; the others were the "Lancaster," the "Hermes" and a 2-funnelled steamer, whose name we could not make out. That evening there were actually seven Englishmen! Towards morning they vanished.

We reached Tangiers at 2 P.M. the 21st, where we found Falckerzani and Enquist with all their ships and transports, save the torpedo boats and the steamer "Knyaz Gorchakov," which had left for Crete. German coalers were awaiting us, and about 5 P.M. the coaler "Pallas" came up to our port side, and we began loading. We did very well, and were so far ahead of the rest that the "Saver" got all three coaling prizes. At 6 P.M. the hospital ship "Orléans," in, passing cleverly under our stern she ranged up on our starboard side with wild hurrahs. At 7 P.M. Falckerzani's contingent the "Sax," "Vohk," "Navarin," "Svetlana," "Almaz," "Jemchug," and transport "Kital" weighed anchor. They, with the torpedo boats and Black Sea transports, go *round* the Suez Canal. We and all the other ships go *round* Africa. We are bound for Dakar, a port in French Senegal quite close to Cape Verd. There we are to stop an enormous quantity of coal, nearly twice our normal supply. We shall have to store it on deck in our batteries and among the whole of our tween decks. It will be a tight fit. Our passage has on the whole been a very smooth one, but it's getting hotter every day. The Admiral seldom shows on the bridge, so that the watch has an easy time of it. The 30th at 8 A.M. we arrived at Dakar, which is by no means a picturesque port. As usual a whole squadron of German coalers were waiting for us. The French received us cordially. The Governor even proposed that our transports should coal from the shore. But telegrams from Paris received during the day forbade him to go on such a thing to an absurdity in the text of a telegram the matter was referred back to Paris, and we began once more to fill up on the coaler. We worked like niggers, and there was desperate competition between us and the "Alexander III." The officers' quarters

our chaplain lent a hand. We finished in great style, taking in 120 tons an hour and so cutting the English record of 102 tons. The "Alexander III" was beat, and we again took all three prizes. But you can hardly conceive what guys we all looked, and what a sight our "Suvoroff," was! We kept hard at it despite the grilling tropical heat, and we slept literally in our own juice and coal dust. Yesterday we were for the first time allowed on shore. The town itself is of no interest; but we were much taken with the local negroes. It was curious to find, amongst the European houses, whole Negro hamlets, living their typical open air life. That evening I dined with some French officers and had a right good time. To-morrow at 3 P.M. we sail south.

III.

GABOON ROADSTEAD:

15th November 1904

A Merry Xmas and A Happy New Year. God grant we have better luck than in 1904. My greetings are rather before the time; but I write from such a "back of beyond" that my letter will do well if it reaches you by Xmas. We left Dakka the 3rd November. After a smooth passage we reached the Gaboon River on the 13th. It is on the 15° N. of latitude. We did not go up the river, as the entrance is difficult, and the harbour has few facilities. We anchored three miles from the shore, outside territorial limits, where we were our own masters. Here, too, were German colliers, and the squadron at once started to coal. A voyage in the Tropics is weary work. By bad luck one of our refrigerators has broken down: the other though worked off its legs cannot keep things really frozen. I have not yet been ashore. They say that after coaling we shall be allowed to go. I shall certainly seize the opportunity. Those who have been here before say it is very interesting. We are about 20 miles from the little town of Libreville: one of our torpedo boats goes there daily. About 150 Europeans live there; and in the last six months, four of them have been eaten by cannibals. Our fellows have even had an audience of the local Negro chief. Just as in good old books of adventures, the chief wore the cast-off uniform of an English Admiral, a cocked hat and blue trousers. His Court Minister was also in uniform and a cocked hat and feathers. It seems the chief has only three days ago succeeded his brother, whose ashes were in a box beside him. The worthy man is to be crowned shortly; and I hope to assist at the show. Yesterday a mail steamer arrived with news up to the 2nd October. The latest telegrams hung up in the Club told of our leaving Vigo! We have had no news of the war for a month. We are quite in the dark as to what Kuropatkin is doing. The Admiral has wired to St. Petersburg for news. You can fancy how we look for the reply. The hardest part of the voyage is now before us. We have to sail round the southern extremity of Africa, and do not know

whether we can coal anywhere *en route*. In the Indian Ocean we are at last to get a mail. The whole squadron draws at nothing else.

ANGRA PEQUENA

28th November 1904. (Received the 6th January 1905)

I write from Angra Pequena, a pretty wretched hole in German South Africa, in latitude 27° S. It's all rock and sand, a swart spot! The town is hidden behind a headland. In 1902 there were only seven Europeans. But since then it has grown up. A steamer with German troops came in today. It seems the English have given arms to a warlike frontier tribe and egged them on against the Germans—a neighbourly act to say the least of it! The wretched Germans have only just settled with the Herreros; and here's another tangle. Since Tangiers this is the first port we have not been positively asked to quit. The Germans are even glad to see us. In fact they are the only nation who are helping us. France has proved a rotten reed. We lay off the Gaboon River till the 18th November. The 17th I was ashore at Libreville. It was nothing like as interesting as I expected. The vegetation is inferior to that of tropical Asia. The Negroes only were of interest, quite a different type from those at Dakka. We officers bought a lot of parrots, green with red tails, some quite tame. The 19th we celebrated with a pomp the "crossing of the line" in accordance with the old naval traditions. Neptune came on board with his spouse and a legion of hobgoblins; he asked the Captain why we had come to the Equator, and took heavy toll in drinks from the officers. Then every one who had not before crossed the line was put under the fire hoses and then into a huge tub made of an awning. Before the tub they were lathered with a painter's brush, the lather was made in a barrel, and then shaved with an 8 foot razor. Then Neptune, his spouse, promising fair winds and free fishing. The porticers were first rate and their costumes beyond reproach. They dressed the Admiral from head to foot, while all the other officers went in for a bath; the Captain they clothed to a flourish of bugles. I took several snap shots. If they turn out well I will send them. For the Gaboon we have come due South. We are all in the better end here, got used to the lack of news. The hospital ship "Orion" has been sent in to Capetown specially for news, for we have had none of the war since the 11th October. We are now heading straight for Madagascar, where at last we shall get a mail and perhaps fresh provisions and the Black Sea transports.

A

MADAGASCAR

28th December 1904

A whole month I've not had a chance of sending you a letter. I wrote last from Angra Pequena the 28th November. Our stay

there was dull ; a steady wind blew, amounting at times to " 10 balls." Coaling from the ships was impossible. We tried bringing a collier alongside, with the sad result that we stove in our own bulwarks and the coalers' too and bent into a bow a 75 m.m. gun of our lower battery. Finally we coaled from barges, taking in 24 tons an hour. On the 3rd December the wind dropped : and the morning of the 4th we weighed anchor and rounded the Cape straight for Madagascar. We do not go to Diego Suarez as was formerly intended, but to Port St. Mary. The 6th we passed Capetown 30 miles away, and fired a salute in honour of the Tsar's name-day. The wind began to get up again. After midnight we rounded Needle Cape, and the next three days had a strong following wind ; the waves were as much as 41 feet high, and we lost our No. 1 light cutter, smashed into matchwood. Our battleships behaved splendidly even under such trying conditions. The roll was barely $8\frac{1}{2}$ and in most cases did not exceed 5° , with seven rolls a minute. The 10th it was calm : and for the rest of our passage the weather was perfect. The 16th we anchored in the Straits between the Marian Islands and Madagascar in a depth of 40 fathoms. The roadstead is open, and an anchorage of such a depth boded nothing good. We had, during our last passage, decided to get rid of our mess caterer who fed us like pigs. I am told off to run the mess :—no easy task, as stores are running short, and the frozen meat on the "Esperance" is almost all turning, and it's hard to get meat ashore. Luckily on the 17th the "Roland" was sent into Port Tamatava with telegrams. I jumped at the chance, and went in on her to get provisions. The French were very polite and even gave us a small ovation ; but then charged famine prices, and passed off inferior goods. While in Port St. Mary we got a series of bad news from the East : the destruction of the Port Arthur squadron : Kuropatkin's inactivity and finally the fall of Port Arthur. We have good cause to be down on our luck ; but our morale is still high ; and I am proud to say there is not a shadow of despondency in the squadron : though God knows how keenly we have felt the bad news. The "Orel" has come back with English papers full of menaces to us and alarming news from Russia. With things so, we were right glad to hear that Kamimura with eight battleships was coming to meet us, and had already passed Ceylon. I don't believe it. It would be too stupid of the Japanese to come so far from their base and meet us with a fraction of their fleet, and so increase our chance of success. They have only to sit quiet at home, and we shall not be long coming. In St. Mary we again heaped up coal in our ships. We took in 2,500 tons, the normal is 1,100. Our junction with Falkersham has not come off owing to interference from Petersburg. They sent him to Pasindova Bay without telling Rojestvensky. How the wires humme between St. Mary's and Pasindova ! We are very much on the ale rat night now. A third of the officers always on deck. The crews sleep at their guns ; torpedo-boats are lowered. At first

Rojestvensky wanted us to keep up banked fires. The 23rd *Enterprise* and the cruisers started; and the morning of the 24th we weighed anchor to join Falkerzam. We had to steam 500 miles round the North of Madagascar and then 150 miles down its western shore. Xmas was spent at sea. The Admiral in a short but feeling speech for the first time during the voyage, thanked the crew for their exertions: tears even stood in his eyes. At noon on the 25th we met the "Svnetland" and two torpedo-boats sent by Falkerzam to look for us. The torpedo-boat "Biedovy" gave us our post a very meagre one, worse luck: not a single letter for me. It's very hard I've had no news since the 2nd December.

VI.

PASINDOVA BAY, MADAGASCAR.

5th January 1905.

Yesterday at last came the long expected mail by a Messenger boat. We move on in two days. A 20 days across the Indian Ocean and we shall be in the theatre of war. I feel sure we shall first meet the Japs in the Zond Archipelago. The Admiral saw the New Year in with us in the Ward room. It was a great treat. He made a short speech and hoped we might meet 1906 safe and sound among our own folk with a sense of duty done. He was very gay, sat up till 2 A.M. and no one felt him *de trop*. After he had gone to bed we had speech after speech, we got even to improvising verses, some fellows kept it up till 8 A.M. The repairing cruises "Terek", "Kuban" and "Ural" have come: sad to say they have lost their appliances. Our stay here is very trying owing to the ants which bite. From 8 A.M. to 4 P.M. one can't do a thing and no one gets to sleep, but one cannot stop the routine of a ship, and it's very hard on the crew.

VII.

NOSSEBE.

22nd January 1905.

Here we still are off Madagascar and no one knows where we go on, perhaps in a day or two, perhaps not for some time. It's hard to imagine anything vaguer than our situation. Life is a little dull but time flies quickly. The weather is like autumn in England only with real tropical rain. Koenigman have at last prevailed on the Admiral to have target practice. We had not fired a shot since Revel. The 10th, 18th and 19th the whole ship was put to sea. The first day's firing was not up to much. The second and particularly the third were splendid. It's very plain how much we need practice. The 12 guns did splendid work. Our 600 gun made 5 hits out of 6 shots, so that Admiral Togo would have guff about it. Best of all they were not flaky shots but

the result of steady fire discipline and accurate laying. Each time our bow gun fired, we felt sure the shot was a good one, and only watched to see if anything was left of the target. The squadron manœuvred by no means badly, especially the first battleship division. On the 20th another mail came by one of Ginsburg's boats. I got several letters from Cronstadt and a bundle of the Kieff Gazettes up to the 19th December. Russia is in the throes of a very interesting crisis, but we get so little news. I am anxious for my dear ones. In Cronstadt there are such a lot of blackguards, thanks to Father John, and so many dock-labourers, that there may be a row at any moment, and the only man in my house there is my 5-month old Alec. What's Klado doing? It's quite time some one went for our Naval Minister. In Klado's articles to the papers there is not a hundredth part of the crimes that worthy person has committed, and continues to commit for the ruin of our ill-starred fleet. If God wills I am to see you again, I will tell you much the wildest fancy could not have conceived. We have at last lost all hope in our Admiral.

VIII.

NOSSIBÉ :

5th February 1905.

The 1st February the long expected "Oleg," "Izumrud" and "Rion" joined us. They arrived in a funny way. The squadron was out manœuvring and came upon them at sea. I was that day left with the launches in the roadstead, and was much surprised at such an addition to the family. These cruisers brought us a surprise mail of the end of December. Our letters were full of the fall of Port Arthur. They were tinged with the sadness we had felt when we first heard the news; and now we had to endure it over again. On the 17th December the aged Messer died at Cronstadt our best and most upright Admiral; the man, who the first of his generation, drew attention to the weak points of our fleet, and all his life strove to remedy them. Proof of this is the fact that not a soul from Petersburg came to his funeral! But I am telling you stale news. Our squadron is hopelessly stranded at Nossibé. There are many things of which I cannot write. But God willing, after the war we will talk them over in the quiet of your study; and I will tell you some queer tales. Do you know, I have not seen the Admiral more than five times this month; so one cannot say he burdens one with his presence! I have less reason than any one to complain; for the whole voyage I have only had three or four wiggings from him. The Admiral has not once been on board the other ships since we left Russia and has only three times assembled his Captains, so what can he know of his squadron? He listens to no one, not even the specialists on technical points. He writes his own orders, generally dashing them off without a moment's thought. When I recall Admirals under whom I have served

and whom I highly esteem, I feel how formidable would our squadron have been under the flag—say, of Dubasoff. His is a name the Japanese respect. Thanks to his resolute action, we did not lose this war in 1897-98. A harsh man, but a true seaman and endowed with many of the attributes of a real leader. Dubasoff would have had his squadron in fine fettle; and if he had closed with Togo, it would have been to the death. But sad to say, owing to intrigues in St. Petersburg, Dubasoff has been passed over, and they first send a man like Skridloff, and then with the 2nd Squadron our Rojestvensky! Lord! how sick and tired we are of this wretched Nossibé. No one knows whether we stay here another month, or go to-morrow. What is most mortifying is the utter want of method. As Mess Secretary I am pretty often ashore. On Tuesday, the 1st February, the Captain of the "Anadmir" and I spent the day in a steam pinnace visiting Negro villages along the shores of Nossé-Kombo Island. Very taking people, these blacks. We very nearly got sunstroke; but saw much of interest. The natives are a merry good tempered folk and much more all-there than our Mupks. I went out shooting on Nossibé Island, killed a jungle-cock, and caught three chameleons, weird critters. I kept one to kill flies in my cabin. He was A-1 at it, but I lost him, worse luck. I saw with my own eyes that chameleons really do change colour. I always wear the saut you gave me. Its chain broke but was mended in our workshop.

IX

NOSSIBÉ

19th February 1905

Here we still are in our beloved Nossibé. Why the black niggers have had time to learn Russian, and the shops sport Russian sign-boards. We are bored to extinction. Lord only knows where we go. We are to coal next week, and shall so heap up our decks that the crews will have nowhere to lie. That, worse luck is a proof that we shall soon be off. For there's no method in what the Admiral does; and he may simply take it into his head to do anything. What we all dread is a return having done nothing. But to go on with a leader like ours is also no pleasant prospect. He continues to show his absolute unfitness to command the service, and an amazing neglect of the essentials of naval tactics. You see, we are in an awful hat. We have fares gone, a whole boat of correspondence, or an ape named Grishka, belonging to one of the staff. This monkey found his way into one of the Flag Captain's cabins. He lost his temper and reported the matter. The report went through all the official channels, and there's a likelihood of a bit of a row before we are done with it. One would laugh if it were not more ready to weep. Something must be done soon, or the crews will get out of hand.

X.

NOSSIBE :

3rd March 1905.

To-day at last we leave for somewhere at noon. As usual it's a secret. All we know is that we have to take in a reserve of 45 days of engineer and other stores, and that the first run will be for about 20 days. We have not a notion whether we are bound for the Zond Isles or Jibouti to meet Nebogatoff. The Admiral has suddenly made up his mind, and so we have at the last a needless scurry. Yesterday morning a Ginsburg boat came in with several thousand tons of urgently needed stores. The transport "Analdir" is hurriedly shipping the stores; and ships may not even take what they most need. In a day or two an enormous mail is expected from Europe; but we are not to wait for it. We have just got the sad news of the rout of Kuropatkin's army—and worst of all, very meagre details. You may suppose we are down on our luck. Things look very black. There's but one thing left for our squadron to do—to get to grips with Togo to the death—yes it has come to this. We won't ask quarter ourselves and we will not spare the Japanese. We have no other way open. To go on is lunacy and folly, as the blockade of Vladivostok has robbed us of our one remaining base; but to turn back is awkward and shameful. We can only hope the Admiral does not commit some hopeless stupidity, and prevent us from at least dying with honour.

XI.

SOUTH CHINA SEA :

28th March 1905.

I take the opportunity of writing you a few lines, and am sorry I have neither the time nor the right to go into details, as this letter may possibly fall into Japanese hands. I hope hereafter to write at greater length. We have been 25 days at sea. We made a good and lucky crossing of the Indian Ocean, have passed the Malacca Straits, a dangerous place for us; and now may any day meet Togo's whole fleet. Reports from Singapore say the Japanese have made Labuan their base; and are keeping a keen lookout for us. The general feeling amongst us is that we can only go home after we have shown the Japanese, they cannot with impunity insult and bespatter with dirt the Russian navy. I feel sure they will find us a tough nut to crack. There is no other way for us: its death or victory. We will sell ourselves as dearly as we can, and not take less than ship for ship. Time passes fairly pleasantly. If only there were not such bad news from the war. We are now used to the daily routine; and I trust, with God's help, we will come through this bitter experience with honour; and that I shall have earned a right to spend the rest of my days with you at home, and be able to speak without a blush of our voyage.

XII

VANG FRANG BAY

21st April 1905

'Christ has risen'

I am sorry I could not write to you for Easter, and for tactical reasons, telegrams in Passion Week were forbidden. It seemed too much like tempting Providence to send you greetings a month beforehand. My last letter I sent from at sea through Saigon about the 26th March. The 31st March we put into Kourang Bay in French Annam. Our mining launches and torpedo boats were sent in first to reconnoitre and drag the bay for mines. I spent some exciting days on our No. 1 mining launch. I got lost and met some pleasant Frenchmen. It's a grand bay, two large anchorages, an outer and an inner. At the head of the bay there is a small French settlement, a private venture, which will be some day a big place. The French received us with open arms, and were very cordial, especially when we gave them a paying job. The transports put in the same day and anchored in the inner harbour, but it was not till the 1st April that the Squadron dropped anchor in the outer. Torpedo boats and mining launches do sentry duty, and the cruisers take turns two at a time to do outpost duty. On Palm Saturday we had a surprise, the French from motives of policy had to ask us to be good enough to quit. On Sunday we were at sea, leaving behind the transports who were coming from German ships. We were out till Wednesday, when we anchored in Vang Frang Bay, 50 miles north of Kourang. This is also a good place, but more barren than Kourang. This refuge was however discovered on the 19th April and again we were asked to go. This time we were only a day away. Our situation is somewhat awkward, we must wait for Nebogatoff who should be here in a day or two. We got a telegram that the 3rd Squadron passed Penang on the 11th. We are anxious as we have not yet heard of its having passed Singapore. So far Nebogatoff has made good progress, only taking 22 months. It is a pity the draught of our Squadron prevented its passing the Suez Canal, for we should long ago have been in the thick of war, and who knows what might have happened. We had a very good Easter, but fasting prevented us having many services in Passion Week. We got lots of pork and poultry for Easter Eve. On Passion Saturday I brought on board a heap of tropical fruits, some very beautiful with which we bedecked our Ward room though it was a bit full of food. The Admiral only exchanged Easter kisses with us, he broke his fast in his own cabin as the cook did not come in from the boat and his staff. I feel this Easter more than ever how well it is at a time like this to be far from one's dear ones.

XIII AND LAST

2nd April 1905

(Received the 6th June three weeks after the battle of Tsushima.)
The 26th April Nebogatoff at last joined us. Thank God, our hearts

are free at last ; and to-morrow we start for Vladivostok. Nebogatoŭ has made a good voyage ; and his ships are in apple-pie order. He has only been $2\frac{1}{2}$ months over it, and with ships which they declared would never get beyond the Mediterranean. Our Admiral evidently cannot stomach the fact that Nebogatoŭ has managed far better than he ; and has shown infinitely more energy and common sense. We have now the substantial addition of two 12", two 10", four 9" and six 4.7" guns. But the Japs will probably decline a stand-up fight, because of the risk to themselves, and will harass us with torpedo attacks and fire ships. We are on the eve of most stirring events. Before this letter reaches you the fate of many of us will have been sealed. Its very vexing, but I cannot arrange to meet Jdanoff (*his brother-in-law, a Lieutenant on the "Ushakoff," who also went down with his ship refusing to leave her*). We have several times talked by semaphore. Nebogatoŭ brought us a small mail. I got letters from my wife and from you. The French again turned us out of Vang Frang. We put to sea the 26th and came back the 28th for the last time we think. Nebogatoŭ is coaling in Kua Bay close by. At dawn to-morrow we are again to put to sea to beat about till the next day, when, please God, we at last move forward.

Lieutenant P. A. Viruboff perished with the battleship "Knyaz Suvoroff" about 6 p.m., 14th May 1905, in the Straits of Tsusima. When the torpedo-boat with Admiral Rojestvensky and his staff put off from the "Suvoroff," Lieutenants Bogdanoff and Viruboff and Ensign Kurcel remained on board. They resolved to share the fate of their ship, and went down with her.

what we were up to; though her Captain, when calling on our Admiral, said he had put in to Vigo merely for letters. As a matter of fact, after calling on the Admiral, the "Lancaster" put out at once to sea, and coming in next morning to receive our Admiral's return visit, went straight out again. All this time our wireless telegraphy kept recording English messages both cyphered and plain; amongst other things, there were, many about the "Esperance." We had no doubt that an English squadron was quite close to us; of this we soon had visible proof. On the 20th, when going on the dogwatch, my predecessor reported that four cruisers, whose lights were visible from either beam, seemed to be escorting us, signalling each other and manœuvring: they plainly had the legs of us, which made us sure they were all ships of the latest type. Amongst them was the "Lancaster": she once in the most truculent way came up nearly alongside us. At dawn we saw all four on the horizon. One of them, a huge 4-funnelled cruiser of the "Drake" class, flew a Rear-Admiral's flag: the others were the "Lancaster," the "Hermes" and a 2-funnelled steamer, whose name we could not make out. That evening there were actually seven Englishmen! Towards morning they vanished.

We reached Tangiers at 2 P.M., the 21st, where we found Falkerzam and Enquist with all their ships and transports, save the torpedo-boats and the steamer "Knyaz Gorchakoff," which had left for Crete. German coalers were awaiting us, and about 5 P.M. the coaler "Pallas" came up to our port side, and we began loading. We did very well, and were so far ahead of the rest that the "Suvoroff" got all three coaling prizes. At 6 P.M. the hospital ship "Orel" came in; passing cleverly under our stern she ranged up on our starboard side with wild hurrahs. At 7 P.M. Falkerzam's contingent the "Sissoi Veliki," "Navarin," "Svietlana," "Almaz," "Jemchug" and transport "Kitai" weighed anchor. They, with the torpedo-boats and Black Sea transports, go *viâ* the Suez Canal. We and all the other ships go round Africa. We are bound for Dakka, a port in French Senegal quite close to Cape Verd. There we are to ship an enormous quantity of coal, nearly twice our normal supply. We shall have to store it on deck in our batteries, and along the whole of our 'tween decks. It will be a tight fit. Our passage has, on the whole, been a very smooth one, but it's getting hotter every day. The Admiral seldom shows on the bridge; so that the watch has an easy time of it. The 30th at 8 A.M. we arrived at Dakka, which is by no means a picturesque port. As usual a whole squadron of German colliers were waiting for us. The French received us cordially. The Governor even proposed that our transports should coal from the shore. But telegrams from Paris received during the day forbade him to give us coal. Owing to an obscurity in the text of a telegram, the matter was referred back to Paris; and we began meanwhile to fill up from the colliers. We worked like niggers, and there was desperate competition between us and the "Alexander III." The officers, doctors, even

our chaplain lent a hand. We finished in great style, taking in 120 tons an hour and so cutting the English record of 102 tons. The "Alexander III" was beat, and we again took all three prizes. But you can hardly conceive what guys we all looked, and what a sight our "Suvoroff," was! We kept hard at it despite the grilling tropical heat, and we slept literally in our own juice and coal dust. Yesterday we were for the first time allowed on shore. The town itself is of no interest; but we were much taken with the local negroes. It was curious to find, amongst the European houses, whole Negro hamlets, living their typical open air life. That evening I dined with some French officers and had a right good time. To-morrow at 3 P.M. we sail south.

III.

GABOON ROADSTEAD:

15th November 1904.

A Merry Xmas and A Happy New Year. God grant we have better luck than in 1904. My greetings are rather before the time; but I write from such a "back of beyond" that my letter will do well if it reaches you by Xmas. We left Dakka the 3rd November. After a smooth passage we reached the Gaboon River on the 13th. It is on the 15° N. of latitude. We did not go up the river, as the entrance is difficult, and the harbour has few facilities. We anchored three miles from the shore, outside territorial limits, where we were our own masters. Here, too, were German colliers, and the squadron at once started to coal. A voyage in the Tropics is weary work. By bad luck one of our refrigerators has broken down: the other though worked off its legs cannot keep things really frozen. I have not yet been ashore. They say that after coaling we shall be allowed to go. I shall certainly seize the opportunity. Those who have been here before say it is very interesting. We are about 20 miles from the little town of Libreville: one of our torpedo boats goes there daily. About 150 Europeans live there; and in the last six months, four of them have been eaten by cannibals. Our fellows have even had an audience of the local Negro chief. Just as in good old books of adventures, the chief wore the cast-off uniform of an English Admiral, a cocked hat and blue trousers. His Court Minister was also in uniform and a cocked hat and feathers. It seems the chief has only three days ago succeeded his brother, whose ashes were in a box beside him. The worthy man is to be crowned shortly; and I hope to assist at the show. Yesterday a mail steamer arrived with news up to the 2nd October. The latest telegrams hung up in the Club told of our leaving Vigo! We have had no news of the war for a month. We are quite in the dark as to what Kuropatkin is doing. The Admiral has wired to St. Petersburg for news. You can fancy how we look for the reply. The hardest part of the voyage is now before us. We have to sail round the southern extremity of Africa, and do not know

whether we can coal anywhere *en route*. In the Indian Ocean we are at last to get a mail. The whole squadron dreams of nothing else.

ANGRA PEQUENA :

28th November 1904. (*Received the 6th January 1905.*)

I write from Angra Pequena, a pretty wretched hole in German South Africa, in latitude 27° S. It's all rock and sand—a sweet spot! The town is hidden behind a headland. In 1902 there were only seven Europeans. But since then it has grown apace. A steamer with German troops came in to-day. It seems the English have given arms to a warlike frontier tribe, and egged them on against the Germans—a neighbourly act to say the least of it! The wretched Germans have only just settled with the Herreros; and here's another tangle. Since Tangiers this is the first port we have not been politely asked to quit. The Germans are even glad to see us. In fact they are the only nation who are helping us. France has proved a rotten reed. We lay off the Gaboon River till the 18th November. The 17th I was ashore at Libreville. It was nothing like as interesting as I expected. The vegetation is inferior to that of tropical Asia. The Negroes only were of interest; quite another type from those at Dakka. We officers bought a lot of parrots, grey with red tails, some quite tame. The 19th we celebrated with much pomp the “crossing of the line” in accordance with the old naval traditions. Neptune came on board with his spouse and a big suite of hobgoblins; he asked the Captain why we had come to the Equator; and took heavy toll in drinks from the officers. Then every one who had not before crossed the line was put under the fire-hoses and then into a huge tub made of an awning. Before the bath they were lathered with a painter's brush, the lather was made in a barrel, and then shaved with an 8-foot razor. Then Neptune let us pass, promising fair winds and free fishing. The performers were first-rate and their costumes beyond reproach. They drenched the Admiral from head to foot, while all the other officers went into the bath; the Captain they tubbed to a flourish of bugles. I took several-snap shots. If they turn out well, I will send them. From Gaboon we have come due south. We are all in fine fettle and have got used to the lack of news. The hospital ship “Orel” has been sent in to Capetown specially for news, for we have had none of the war since the 11th October. We are now heading straight for Madagascar, where at last we shall get a mail and join Falkerkam's ships and the Black Sea transports.

V.

MADAGASCAR :

28th December 1904.

A whole month I've not had a chance of sending you a letter. wrote last from Angra Pequena, the 28th November. Our stay

there was dull ; a steady wind blew, amounting at times to " 10 balls." Coaling from the ships was impossible. We tried bringing a collier alongside, with the sad result that we stove in our own bulwarks and the coalers' too and bent into a bow a 75 m.m. gun of our lower battery. Finally we coaled from barges, taking in 24 tons an hour. On the 3rd December the wind dropped : and the morning of the 4th we weighed anchor and rounded the Cape straight for Madagascar. We do not go to Diego Suarez as was formerly intended, but to Port St. Mary. The 6th we passed Capetown 30 miles away, and fired a salute in honour of the Tsar's name-day. The wind began to get up again. After midnight we rounded Needle Cape, and the next three days had a strong following wind ; the waves were as much as 41 feet high, and we lost our No. 1 light cutter, smashed into matchwood. Our battleships behaved splendidly even under such trying conditions. The roll was barely $8\frac{1}{2}$ and in most cases did not exceed 5° , with seven rolls a minute. The 10th it was calm : and for the rest of our passage the weather was perfect. The 16th we anchored in the Straits between the Marian Islands and Madagascar in a depth of 40 fathoms. The roadstead is open, and an anchorage of such a depth boded nothing good. We had, during our last passage, decided to get rid of our mess caterer who fed us like pigs. I am told off to run the mess :—no easy task, as stores are running short, and the frozen meat on the "Esperance" is almost all turning, and it's hard to get meat ashore. Luckily on the 17th the "Roland" was sent into Port Tamatava with telegrams. I jumped at the chance, and went in on her to get provisions. The French were very polite and even gave us a small ovation ; but then charged famine prices, and passed off inferior goods. While in Port St. Mary we got a series of bad news from the East : the destruction of the Port Arthur squadron : Kuropatkin's inactivity and finally the fall of Port Arthur. We have good cause to be down on our luck ; but our morale is still high ; and I am proud to say there is not a shadow of despondency in the squadron ; though God knows how keenly we have felt the bad news. The "Orel" has come back with English papers full of menaces to us and alarming news from Russia. With things so, we were right glad to hear that Kamimura with eight battleships was coming to meet us, and had already passed Ceylon. I don't believe it. It would be too stupid of the Japanese to come so far from their base and meet us with a fraction of their fleet, and so increase our chance of success. They have only to sit quiet at home, and we shall not be long coming. In St. Mary we again heaped up coal in our ships. We took in 2,500 tons, the normal is 1,100. Our junction with Falkerzam has not come off owing to interference from Petersburg. They sent him to Pasindova Bay without telling Rojestvensky. How the wires humme between St. Mary's and Pasindova ! We are very much on the ale rat night now. A third of the officers always on deck. The crews sleep at their guns ; torpedo-boats are lowered. At first

Rojestvensky wanted us to keep up banked fires. The 23rd Enquist and the cruisers started; and the morning of the 24th we weighed anchor to join Falkerzam. We had to steam 500 miles round the North of Madagascar and then 150 miles down its western shore. Xmas was spent at sea. The Admiral in a short but feeling speech, for the first time during the voyage, thanked the crew for their exertions: tears even stood in his eyes. At noon on the 25th we met the "Svietland" and two torpedo-boats sent by Falkerzam to look for us. The torpedo-boat "Biedovy" gave us our post, a very meagre one, worse luck: not a single letter for me. It's very hard. I've had no news since the 2nd December.

VI.

PASINDOVA BAY, MADAGASCAR:

5th January 1905.

Yesterday at last came the long expected mail by a Messagerie boat. We move on in two days. A 20 days across the Indian Ocean and we shall be in the theatre of war. I feel sure we shall first meet the Japs in the Zond Archipelago. The Admiral saw the New Year in with us in the Ward-room. It was a great night. He made a short speech and hoped we might meet 1906 safe and sound, among our own folk, with a sense of duty done. He was very gay; sat up till 2 A.M. and no one felt him *de trop*. After he had gone to bed we had speech after speech; we got even to impromptu verses: some fellows kept it up till 8 A.M. The repairing cruisers "Terek," "Kuban" and "Ural" have come: sad to say they have but poor appliances. Our stay here is very trying owing to the unbearable heat. From 8 A.M. to 4 P.M. one can't do a thing and no one ashore stirs; but one cannot stop the routine of a ship, and it's very hard on the crew.

VII.

NOSSIBE:

22nd January 1905.

Here we still are off Madagascar and no one knows when we go on: perhaps in a day or two, perhaps not for some time. It's hard to imagine anything vaguer than our situation. Life is deadly dull, but time flies quickly. The weather is like autumn in Petersburg only with real tropical rain. Keen men have at last prevailed on the Admiral to have target practice. We had not fired a shot since Revel. The 13th, 18th, and 19th, the whole squadron put to sea. The first day's firing was not up to much. But the second, and particularly the third were splendid. It's very plain how much we need practice. The 12" guns did specially well. Our bow gun made 5 hits out of 6 shots; so that Admiral Togo would have got it hot. Best of all, they were not fluky shots, but

the result of steady fire discipline and accurate laying. Each time our bow gun fired, we felt sure the shot was a good one, and only watched to see if anything was left of the target. The squadron manœuvred by no means badly, especially the first battleship division. On the 20th another mail came by one of Ginsburg's boats. I got several letters from Cronstadt and a bundle of the Kieff Gazettes up to the 19th December. Russia is in the throes of a very interesting crisis, but we get so little news. I am anxious for my dear ones. In Cronstadt there are such a lot of blackguards, thanks to Father John, and so many dock-labourers, that there may be a row at any moment, and the only man in my house there is my 5-month old Alec. What's Klado doing? It's quite time some one went for our Naval Minister. In Klado's articles to the papers there is not a hundredth part of the crimes that worthy person has committed, and continues to commit for the ruin of our ill-starred fleet. If God wills I am to see you again, I will tell you much the wildest fancy could not have conceived. We have at last lost all hope in our Admiral.

VIII.

NOSSIBÉ :

5th February 1905.

The 1st February the long expected "Oleg," "Izumrud" and "Rion" joined us. They arrived in a funny way. The squadron was out manœuvring and came upon them at sea. I was that day left with the launches in the roadstead, and was much surprised at such an addition to the family. These cruisers brought us a surprise mail of the end of December. Our letters were full of the fall of Port Arthur. They were tinged with the sadness we had felt when we first heard the news; and now we had to endure it over again. On the 17th December the aged Messer died at Cronstadt—our best and most upright Admiral; the man, who the first of his generation, drew attention to the weak points of our fleet, and all his life strove to remedy them. Proof of this is the fact that not a soul from Petersburg came to his funeral! But I am telling you stale news. Our squadron is hopelessly stranded at Nossibé. There are many things of which I cannot write. But God willing, after the war we will talk them over in the quiet of your study; and I will tell you some queer tales. Do you know, I have not seen the Admiral more than five times this month; so one cannot say he burdens one with his presence! I have less reason than any one to complain; for the whole voyage I have only had three or four wiggings from him. The Admiral has not once been on board the other ships since we left Russia and has only three times assembled his Captains, so what can he know of his squadron? He listens to no one, not even the specialists on technical points. He writes his own orders, generally dashing them off without a moment's thought. When I recall Admirals under whom I have served

and whom I highly esteem, I feel how formidable would our squadron have been under the flag—say, of Dubasoff. His is a name the Japanese respect. Thanks to his resolute action, we did not have this war in 1897-98. A harsh man, but a true seaman, and endued with many of the attributes of a real leader. Dubasoff would have had his squadron in fine fettle; and if he had closed with Togo, it would have been to the death. But sad to say, owing to intrigues in St. Petersburg, Dubasoff has been passed over; and they first send a man like Skridloff, and then with the 2nd Squadron our Rojestvensky! Lord! how sick and tired we are of this wretched Nossibé. No one knows whether we stay here another month or go to-morrow. What is most mortifying is the utter want of method. As Mess Secretary I am pretty often ashore. On Tuesday, the 1st February, the Captain of the “Anadir” and I spent the day in a steam pinnace visiting Negro villages along the shores of Nosse-Kombo Island. Very taking people, these blacks. We very nearly got sunstroke; but saw much of interest. The natives are a merry good tempered folk and much more all-there than our Mujiks. I went out shooting on Nossibé Island; killed a jungle-cock, and caught three chameleons, weird critters. I kept one to kill flies in my cabin. He was A-1 at it, but I lost him, worse luck. I saw with my own eyes that chameleons really do change colour. I always wear the saint you gave me. It’s chain broke but was mended in our workshop.

IX

NOSSIBE :

19th February 1905.

Here we still are in our beloved Nossibé. Why, the local niggers have had time to learn Russian, and the shops sport Russian sign-boards. We are bored to extinction. Lord only knows when we go. We are to coal next week, and shall so heap up our decks that the crews will have nowhere to lie. That, worse luck, is no proof that we shall soon be off. For there’s no method in what the Admiral does; and he may simply take it into his head to coal for nothing. What we all dread is a return, having done nothing. But to go on with a leader like ours is also no pleasant prospect. He continues to show his absolute unfitness to command the squadron, and an amazing neglect of the essentials of naval tactics. You see we are in an awful hat. We have farces galore—a whole file of correspondence *re* an ape named Grishka, belonging to one of the staff. This monkey found his way into one of the Flag Captain’s cabins. He lost his temper and reported the matter. The report went through all the official channels, and there’s a likelihood of a bit of a row before we are done with it. One would laugh, if only one were not more ready to weep. Something must be done soon or the crews will get out of hand.

X.

NOSSIBE :

3rd March 1905.

To-day at last we leave for somewhere at noon. As usual it's a secret. All we know is that we have to take in a reserve of 45 days of engineer and other stores, and that the first run will be for about 20 days. We have not a notion whether we are bound for the Zond Isles or Jibouti to meet Nebogatoff. The Admiral has suddenly made up his mind, and so we have at the last a needless scurry. Yesterday morning a Ginsburg boat came in with several thousand tons of urgently needed stores. The transport "Analdir" is hurriedly shipping the stores; and ships may not even take what they most need. In a day or two an enormous mail is expected from Europe; but we are not to wait for it. We have just got the sad news of the rout of Kuropatkin's army—and worst of all, very meagre details. You may suppose we are down on our luck. Things look very black. There's but one thing left for our squadron to do—to get to grips with Togo to the death—yes it has come to this. We won't ask quarter ourselves and we will not spare the Japanese. We have no other way open. To go on is lunacy and folly, as the blockade of Vladivostok has robbed us of our one remaining base; but to turn back is awkward and shameful. We can only hope the Admiral does not commit some hopeless stupidity, and prevent us from at least dying with honour.

XI.

SOUTH CHINA SEA :

28th March 1905.

I take the opportunity of writing you a few lines, and am sorry I have neither the time nor the right to go into details, as this letter may possibly fall into Japanese hands. I hope hereafter to write at greater length. We have been 25 days at sea. We made a good and lucky crossing of the Indian Ocean, have passed the Malacca Straits, a dangerous place for us; and now may any day meet Togo's whole fleet. Reports from Singapore say the Japanese have made Labuan their base; and are keeping a keen lookout for us. The general feeling amongst us is that we can only go home after we have shown the Japanese, they cannot with impunity insult and bespatter with dirt the Russian navy. I feel sure they will find us a tough nut to crack. There is no other way for us: its death or victory. We will sell ourselves as dearly as we can, and not take less than ship for ship. Time passes fairly pleasantly. If only there were not such bad news from the war. We are now used to the daily routine; and I trust, with God's help, we will come through this bitter experience with honour; and that I shall have earned a right to spend the rest of my days with you at home, and be able to speak without a blush of our voyage.

XII.

VANG FRANG BAY:

21st April 1905.

Christ has risen!

I am sorry I could not write to you for Easter; and for tactical reasons, telegrams in Passion Week were forbidden. It seemed too much like tempting Providence to send you greetings a month beforehand. My last letter I sent from at sea through Saigon about the 26th March. The 31st March we put into Kamrang Bay in French Annam. Our mining launches and torpedo-boats were sent in first to reconnoitre and drag the bay for mines. I spent some exciting days on our No. 1 mining launch. I got ashore and met some pleasant Frenchmen. It's a grand bay: two large anchorages, an outer and an inner. At the head of the bay there is a small French settlement, a private venture, which will be some day a big place. The French received us with open arms, and were very cordial, especially when we gave them a paying job. The transports put in the same day, and anchored in the inner harbour; but it was not till the 1st April that the squadron dropped anchor in the outer. Torpedo-boats and mining launches do sentry-go; and the cruisers take turns two at a time to do outpost duty. On Palm Saturday we had a surprise; the French from motives of policy had to ask us to be good enough to quit. On Sunday we put to sea, leaving behind the transports who were coaling from German ships. We were out till Wednesday, when we anchored in Vang Frang Bay, 50 miles north of Kamrang. This is also a good place, but more barren than Kamrang. This refuge was, however, discovered on the 19th April, and again we were asked to go. This time we were only a day away. Our situation is somewhat awkward: we must wait for Nebogatoff, who should be here in a day or two. We got a telegram that the 3rd Squadron passed Penang on the 15th. We are anxious as we have not yet heard of its having passed Singapore. So far Nebogatoff has made good progress, only taking 2½ months. It's a pity the draught of our squadron prevented its passing the Suez Canal; or we should long ago have been in the theatre of war; and who knows what might have happened? We had a fairly good Easter; but coaling prevented us having many services in Passion Week. We got lots of pork and poultry for Easter fare. On Passion Saturday I brought on board a heap of tropical foliage, some very beautiful, with which we bedecked our Ward-room, though it was half full of coal. The Admiral only exchanged Easter kisses with us; but broke his fast in his own cabin, as the coal did not leave us room to seat him and his staff. I felt this Easter more than ever, how sad it is at a time like this to be far from one's dear ones.

XIII AND LAST.

29th April 1905.

(Received the 6th June three weeks after the battle of Tsushima.)
The 26th April Nebogatoff at last joined us. Thank God, our hands

are free at last ; and to-morrow we start for Vladivostok. Nebogatoff has made a good voyage ; and his ships are in apple-pie order. He has only been $2\frac{1}{2}$ months over it, and with ships which they declared would never get beyond the Mediterranean. Our Admiral evidently cannot stomach the fact that Nebogatoff has managed far better than he ; and has shown infinitely more energy and common sense. We have now the substantial addition of two 12", two 10", four 9" and six 4-7" guns. But the Japs will probably decline a stand-up fight, because of the risk to themselves, and will harass us with torpedo attacks and fire ships. We are on the eve of most stirring events. Before this letter reaches you the fate of many of us will have been sealed. Its very vexing, but I cannot arrange to meet Jdanoff (*his brother-in-law, a Lieutenant on the "Ushakoff," who also went down with his ship refusing to leave her*). We have several times talked by semaphore. Nebogatoff brought us a small mail. I got letters from my wife and from you. The French again turned us out of Vang Frang. We put to sea the 26th and came back the 28th for the last time we think. Nebogatoff is coaling in Kua Bay close by. At dawn to-morrow we are again to put to sea to beat about till the next day, when, please God, we at last move forward.

Lieutenant P. A. Viruboff perished with the battleship "Knyaz Suvoroff" about 6 p.m., 14th May 1905, in the Straits of Tsusima. When the torpedo-boat with Admiral Rojestvensky and his staff put off from the "Suvoroff," Lieutenants Bogdanoff and Viruboff and Ensign Kurcel remained on board. They resolved to share the fate of their ship, and went down with her.

PRECIS OF RUSSIAN MILITARY PAPERS.

"*Razvedchik.*"

March, April and May.—The causes which led to the defeat of the Russians in the late war are discussed in one of the April numbers. After recapitulating the reasons usually given, *viz.*, unpreparedness of Russia, lack of enthusiasm on the part of the Russian people, an inefficient general staff, etc., the writer goes on to declare that one important factor has been lost sight of altogether—the fact that in the Russian army there was hardly a single officer or man who could speak or write either Japanese or Chinese. The result of this was, of course, that the Russians had to depend entirely on Chinese or Korean interpreters who, as often as not, turned out to be Japanese spies. He instances the case of the "Korean," employed as interpreter at Headquarters in Harbin, who was discovered to be a Japanese only towards the end of the war. On the other hand, the Japanese had a regular corps of interpreters in Russian and every small detachment, when acting independently, was supplied with an interpreter as a matter of course. Towards the end of the war, the writer declares, there was hardly a single Japanese officer who had not some knowledge of either Russian or English. He finishes by urging the formation of a similar corps of interpreters in the Russian army, especially in the Chinese and Japanese languages, which would be easy at the present time owing to the large number of officers and men who learnt to speak Japanese, and in some cases Chinese, while they were prisoners of war in Japan.

In the following number there is an article on the question of improving the pay and prospects of the Russian officer, which is now being considered by the Russian Government. The writer states that a large proportion of the more capable officers resign their commissions, not from lack of enthusiasm for their profession, but simply because they find the pay is utterly inadequate to their needs and promotion is so slow that they are old men before they get anything like a living wage. The proposal now before the Government, which apparently provides for a general increase of pay of all the junior ranks, involves, however, such a great additional expenditure (nearly 3 million roubles per annum) that, in view of the present impoverished state of the country, it is extremely doubtful whether it is capable of realisation. Promotion will be accelerated, though by the recent General Order, which provides for the compulsory retirement of those officers who have reached a certain age without being promoted to the rank of Lieutenant-Colonel.

The same number contains the official description of the new pattern "kitel" or summer uniform for officers, for wear both in peace and war time. The material is to be cotton or wool and the colour

is stated to be "a yellowish grey with a shade of green." The shape appears to be very similar to that of our present pattern of khaki coat except that the collar is a standing one.

There is also a copy of a General Order recently issued concerning the duties of officers of the General Staff belonging to Army Corps and Divisions. It commences by stating that the General Staff, just as much as any other part of the army, requires to be radically reformed, and then proceeds to lay down what will, in future, be considered the special duties belonging to these officers. They are as follows:—

- (a) The drawing up and correction of mobilisation plans.
- (b) Working out plans of campaign against every possible enemy.
- (c) Making extended reconnaissances and carefully studying all details of the country in which their corps or divisions are posted.
- (d) Drawing up plans, proposals and tasks for the tactical training of the troops in their corps or divisions.
- (e) Assisting officers in the tactical training of their men.
- (f) Direction of Staff Rides for officers of all branches of the service.
- (g) Giving frequent lectures on all subjects of military interest.
- (h) Taking part in field manœuvres as commanders of units, chiefs of staff or umpires.

In the order, it is pointed out, that officers of the General Staff during the past year gave little or no help in the training of the troops and that in the future the above is to be considered as a guide in the carrying out of these duties.

Further on is given the detailed report of the Inspector-General of Infantry of his last tour, which is interesting for his scathing remarks on the methods of training recruits and young soldiers. Officers, he states, are scarcely ever present at ordinary drills and leave the work entirely to the non-commissioned ranks. Lectures and verbal instruction are sometimes given by officers, but even then are often useless and unsuitable owing to lack of preparation of the subject. The report states that the physique and conduct of the young soldiers are excellent and that they would make good soldiers if properly trained, but that in this particular, *viz.*, lack of interest in their work on the part of the officers, very much is left to be desired.

The next and succeeding numbers contain a description of the latest manœuvres of the foreign-drilled Chinese troops, in other words, of Viceroy Yuan-shih-kai's army. In the year 1905 this army consisted of about 20,000 men; it now consists of seven complete divisions, giving a total of about 60,000 of all ranks. Each division is made up as follows:—6,450 infantry, 675 cavalry and 1,500 artillery. In the manœuvres six weak divisions took part, the total strength being about 25,000 men with 100 guns. Apparently no definite scheme of operations was followed out during these manœuvres, the

object of which seems to have been principally to impress the foreign military attachés and newspaper correspondents, who were present in large numbers.

The general impression produced on the foreign visitors was an excellent one. The troops, especially the rank and file, were smart-looking men of very fine physique and seemed to understand their work thoroughly and to take an interest in it. Their uniform and equipment seemed sound and serviceable. The manœuvres, though not following any consecutive scheme of operations, but being divided up, for the benefit of the foreign spectators, into a series of spectacular displays by the different arms, were carried out in as realistic a manner as was possible under the circumstances. Cover was utilised intelligently and the spade was used whenever possible.

A remarkable fact was the number of Japanese officers present, dressed in Chinese uniforms and actually commanding Chinese troops. This was, however, denied by the Chinese, who stated that the supposed Japanese were natives of the southern parts of the Chinese Empire and for that reason did not speak the Pekinese dialect. This explanation, the writer adds, deceived no one, as the men were obviously Japanese and invariably spoke Japanese amongst themselves.

The latter part of this series is devoted to a consideration of the reality or otherwise of the "Yellow Danger." The writer considers that, in view of the tremendous strides made by China in providing herself with a real and formidable army, the "Yellow Danger" undoubtedly does exist—in the sense that before long the Chinese army will be fit to try conclusions with any of the great military powers.

In another number the question of a new uniform for the Russian army, which has not yet been settled, is discussed. In choosing a uniform, the writer states, two entirely different kinds of dress are required: (1) a bright-coloured, smart dress for wear in peace time, and (2) a serviceable dress of "protective" colour for use in the field. These two conditions are capable of realisation in the case of rich countries with comparatively small armies; in the case of a country like Russia the provision of two uniforms is out of the question, on account of the expense. The suggestion now put forward is, briefly, as follows:—to adopt a dull-coloured uniform, suitable for use in the field, and to give each man two suits of it; one, which should have no ornamentation of any sort about it, not even bright buttons, to be kept for use at manœuvres and on active service; the other, which would be worn for all ordinary purposes, to be made as bright and attractive as possible by the addition of all possible detachable forms of decoration: gold and silver lace, bright-coloured facings, brass or gilt buttons, shoulder-straps, etc. In proceeding on active service when, of course, both suits would have to be taken, these embellishments could be removed.

"Signalling in the Artillery" is next discussed. In the late war batteries were supplied with field telephones, but these were

found to be quite insufficient and the want of some kind of visual signalling was severely felt. Owing to the extensive use of indirect fire, the battery commander found it extremely difficult to transmit his orders to the battery and, as he had to be constantly changing his position, it was practically impossible to keep him connected up by telephone with the battery and orderlies had to be resorted to, which proved a very unsatisfactory solution of the difficulty.

The use of the small semaphore flags, which have already been introduced into the Russian army, is now recommended. For the purpose of signalling with these flags, the Russian alphabet has been reduced to 29 letters, but the writer does not propose to limit himself to the sending of messages spelt out letter by letter, which, he thinks, requires too much time. He suggests that it would be possible to have a small code of signals, each having a special meaning with regard to the direction of fire; these special signals to be differentiated from the ordinary alphabet, which would be retained for the sending of ordinary messages, by means of an introductory signal. In this way, the writer thinks, the work of directing the fire of a battery would be much simplified and accelerated.

The leading article in the issue of 18th May is devoted to a consideration of the problem of the invasion of India, which is, apparently, again attracting some attention in Russia on account of the so-called "unrest" in India. The writer of the article, who is the editor of the paper, is, however, of opinion that in the present time such a gigantic undertaking would be far more difficult to carry out than it would have been in the past, owing to the improved distribution of the British forces, and that the idea of a general rising of the native population of India as soon as the advanced guard of the Russian army crossed the Hindu Kush—a theory originated and fondly cherished by Skobelev—ought to be dismissed as an idle dream with no facts whatever to support it. The facts, he says, all point in the opposite direction. In the campaign in the Tirah of 1897 Afridis who were serving with regiments of the native army were quite prepared to fight against their own countrymen and kindred and did so, although the authorities would have spared them this trying duty. If the idea of loyalty has such great weight as this with the native troops, the writer argues, how can Russians imagine that the people of India and in particular the native army would be ready to throw in their lot at once with a foreign invader, the success of whose undertaking would be doubtful, to say the least of it. The writer concludes by stating that the English have not for some years taken the Russian threats of invasion of India at all seriously, and that it is now time to give up the idea altogether and instead to strive for a better understanding with England on the subject of Central Asian questions.

"Voyenni Sbornik."

In the March number the question of the training of Cavalry to meet the changed requirements of modern warfare is discussed at

length, the writer in conclusion pointing out how the present defects may be eliminated. He considers that the two chief defects in the training of Cavalry, both in the Russian and in most continental armies, are (a) too much time is spent in riding-school and on the barrack-square practising drill pure and simple, and (b) insufficient preliminary training of officers and non-commissioned officers before they are entrusted with the actual training in the field of the rank and file.

He suggests that if ceremonial, accurate dressing of the ranks, and complicated evolutions which are rarely, if ever, employed on the battlefield, were abolished *in toto*, the saving of time would be so great that a great deal more attention could be paid to the really important work of Cavalry—scouting, reconnaissance, outpost duty, musketry, etc., in all of which duties the Russian Cavalry proved itself so lamentably deficient in the late war.

For the better training of officers and non-commissioned officers he suggests regular courses of field work before they are entrusted with the training of the rank and file at all and, throughout the course of their service, frequent staff rides on a small scale.

The same number contains an interesting article on the recent growth of the military spirit on the continent, due, in great measure, the writer thinks, to the success of the Japanese in the late war. One of the most striking phenomena of this development is the great increase in the number of rifle-clubs in almost every country in Europe. Another remarkable fact is that gymnastics and military exercises are now considered an essential part of a boy's education and are compulsory in practically all national and State-aided schools. In Switzerland, which is the model in this respect, every boy between the ages of 10 and 16, whether subsequently called out for training with the regular army or not, has a certain amount of military training and, in case of emergency, is very soon fit to take his place in the ranks.

GERMAN PAPERS.*"Die Militarische Welt."*

The first four numbers of the year do not contain anything which would repay reproduction, except the article of which a précis is given below. The remaining pages consist chiefly of some short sketches of the lives of famous Austrian and French leaders, literary reviews, a detailed account of the Armies of the Balkan States, details of some new motor-cars, etc., and the usual notes of military events in other countries.

What Lessons can be drawn from the Wars in South Africa and the Far East as regards the Tactical and Moral Principles of the Conduct of War?

"A single campaign is worth more than all the manœuvres of 30 years of peace," said Frederick the Great.

Real lessons can only be drawn by looking at things from a broad point of view, and not from minor issues, and thus it would appear that false lessons were hastily drawn from the exceptional circumstances of the last war of the 19th century. Similarly the Austrians after 1859 thought they had learnt that the bayonet charge of the French was more effective than the fire-tactics of their own infantry which were really defensive: 1866, however, taught them that such charges of even absolutely devoted troops were unavailing against the superior efficacy of the Prussian rifle. What was right in the year 1859 was wrong under the altered conditions of 1866.

The French imagined that from the War of 1866 they drew the lesson that the development of an overwhelming rifle and machine-gun fire on the defensive must necessarily always be the most effective kind of tactics, for, they thought, the attacker would be shaken by this fire, and a timely counter-stroke must destroy him. But, in 1870, Worth and Spicheren, Mars la Tour and Gravelotte proved that the very opposite may on occasions hold good: the French had omitted to take into account the personal equation. Moral qualities are the moving factors of war.*

Bearing in mind broad principles, therefore, the following three lessons are set forth:—

- I.—The personal element must be placed before fixed methods.
- II.—The infantry must cultivate a spontaneous impetus in their method of advancing to the attack, making use

*"The moral is to the physical," says Napoleon, "as 3 is to 1."—(Trans.)

of every weapon they possess. Their actions must always be influenced by the thought "Forward on to the enemy, cost what it may!" This demands a high moral worth of the troops.

III.—Individuality, which comes to the front—within important limits—is the foundation of the great successes of war.

The following are the chief lessons for Infantry that the writer draws from the Boer War:—

1. The troops must be well schooled and trained to overcome the great difficulties of the attack over open country.
2. The defenders conceal themselves to the utmost of their power in order to offer as small a target as possible to the enemy's artillery and to deceive him as to their real strength, whilst the attacker makes the greatest possible use of the ground during his advance.
3. The "Fog of War" demands the most careful reconnaissance, intelligence, tactical grasp of the situation, spirit of enterprise, and keenness of officers and men.
4. The great importance of the personal equation.
5. War is not carried out in fixed forms and grooves, and the troops must be prepared to adapt themselves to any eventuality which may arise.

The writer goes on to show that these lessons are embodied in the latest Austrian, French, and German training manuals.

He then develops the rise of the Japanese nation, and contrasts the well-known qualities of their army with those of the Russian army before the war.

The Japanese infantry, he says, were trained on the German model; they recognised, however, that the stiff drill formations were but a means to an end. Though they began with close formations at the Yalu, Kiaochao, and Wafangkao, and their victories in consequence cost them heavy losses, as the campaign progressed, they resorted to looser formations, invariably digging in to retain ground gained, and infantry advances under cover of night, all of which tended to obviate losses. The Russian soldiers lacked initiative and leadership; they were always too crowded together in their formations, and were prone to use cold steel too soon. Of this the veteran Dragomiroff was the great advocate, and he encouraged the Russian saying "The bullet is a fool, the bayonet alone is wise."

To sum up, the Infantry lessons to be learnt from the war in the Far East are shortly:—

1. Infantry is the principal arm, and in co-operation with the artillery overwhelms the enemy with fire-power.
2. Keeping clear of stereotyped methods.
3. The most careful individual training.
4. Flexibility of formations
5. Initiative.
6. Use of ground.

7. The avoidance of close formations.
8. Readiness to come to close quarters.
9. Capability of fighting in any situation.
10. Presence of mind.
11. Energy.
12. Spirit of self-sacrifice.

CAVALRY.

From the fact that but little use was made of cavalry in South Africa and the Far East it has been said that cavalry is not worth much in the campaigns of to-day. This is, however, a great error. In both these wars had only cavalry been available, ordinary defeats might have been converted into decisive routs.

Modern war has need of cavalry more than ever—a cavalry which is numerous, pushing, and ubiquitous. They must undertake the service of exploration, and make use of modern inventions, such as telegraphy, wireless telegraphy, heliographs, etc., to submit safely and accurately the information which they have gained.

Above all it must be remembered that the cavalry must defeat the opposing cavalry, and clear the field. Whether this is accomplished in mounted combat or on foot depends on circumstances.

Horse artillery should accompany all the larger cavalry detachments. Cavalry is and must remain the eyes of the army.

FIELD ARTILLERY.

The Boer War, says the writer, told us nothing that we did not know before about field artillery: the English shrapnel made but little impression on the Boers in their deep and narrow trenches.

In Manchuria the Japanese used guns of an old pattern. The Russian leaders were not *au fait* with the tactics of modern field artillery, and the officers and men in many cases fired ball for the first time against the enemy.

The chief Russian faults were that they fired from too long ranges, and always from concealed positions.

Breech-loading guns and shields are essentials. Shrapnel remains the principal kind of ammunition. Light howitzers, for use from concealed positions, are of great use when heavy howitzers cannot be brought up. Japanese concentration of fire by dispersion of batteries was most effective.

The vexed question of 4, 6 or 8-gun batteries remains unanswered, though the Russians do not appear to have done much with their batteries of 8 guns with 16 ammunition waggons.

HEAVY ARTILLERY.

On both sides in the Russo-Japanese War heavy artillery was improvised. This proves how important and necessary it is. Mortars, heavy howitzers, and long guns each have their own use.

There remains the importance of—
Field fortification.

Methods of communication on the battlefield.

The question of feeding the troops during battle of many days' duration by means of portable kitchens. These latter were taken up into the firing-line when darkness fell.

The simplification of the men's equipment

The writer concludes with Oku's exhortation before the Battle of Mukden—"The secret of victory lies less in the leaders, less in weapons, than in the bravery, energy, eagerness for the combat, power of endurance, patriotism, in short in the spirit of all from the Commander-in-Chief to the humblest soldier."

This is the chief lesson, this is the most important consequence of the great struggle in the Far East. "It is the moral factor which wins battles," laid down by Napoleon in his great wisdom.

This saying is more than ever true with the national armies of to-day.

INTERNATIONALE REVUE.

Über die Gesamten Armeen und Flotten.

The numbers of January, February, March, and April contain some comments on the military and naval changes in the principal countries of the world, but nothing else of much interest.

The supplements, however, contain some interesting articles; that on the "Employment of Balloons in the Russo-Japanese War" being translated in full, while a précis of some other is also given.

The Employment of Balloons in the Russo-Japanese War.

[Translated from the Supplement to the "Internationale Revue Über die Gesamten Armeen und Flotten" of February 1907.]

We only possess circumstantial reports on the employment of balloons during the Russo-Japanese War from Russian sources, for the Japanese, as is their custom, have published nothing on the subject. Besides, their experiences cannot have been very prolific. The following information on the work of the Siberian Balloon Company during the war is taken from the "*Rudzwjedschik*" No. 744 of 1905:—

The Siberian Balloon Company, which came into being during the war, arrived in the theatre of operations at the end of June 1904, and immediately marched forward towards the Taitse Ho to join the 10th Corps. It took with it 26 vehicles as first *échelon* and was only able to move forward slowly, on roads which were far from good, for these vehicles were much too heavy. Sixty-four more followed as second *échelon*. The men were obliged to make great efforts to get them on.

The company was directed on Koudsia 40 *kilomètres* (about 25 miles) to the east of Liao Yang, on the left flank of the Russian position. At a distance of about 15 *kilomètres* (9 or 10 miles) from Koudsia, the balloon was filled, so that the first ascent was able to take place on July 23rd, immediately after their arrival. General of Division Slutchewski, commanding the 10th Army Corps, himself took part in this ascent.

The Japanese positions, only 5 *kilomètres* (about 3 miles) away, could be easily recognised, and one could even distinguish individuals.

The company was then sent forward *viâ* Liao Yang on Hai-cheng, but it was not employed, for the Russians had already retired.

From that time onwards it was placed under the orders of the General-in-Chief of the Engineers.

It was again made use of on August 23rd, and it was, thanks to its observations, that it was possible on August 31st to report that the Japanese were trying to turn the Russian right flank. Marshal Oyama himself confessed that he was several times forced to modify his dispositions, as he saw that he was being observed from a balloon.

The results of the shooting attempted at this balloon are particularly interesting. The Japanese artillery, well concealed in the fields of *kaoliang*, fired shrapnel at it. Several of these projectiles burst quite close to the balloon, in front and in rear, and the bullets were scattered amongst the men working at the windlass. Still there were no losses. The balloon itself was hit by several bullets, but without suffering any damage.

Later on the balloon was subject to a similar artillery fire on eight occasions, and each time the result was equally a negative one.

This experience is most valuable, for it shows how difficult it is to seriously affect a balloon, and in addition that a hit even need not necessarily have fatal results.

The Russians used the French spherical balloon, made of rather stout silk, and the Riedinger balloon-kite.

On September 1st the balloon was again employed to make observations, and once more was exposed to the enemy's fire without being hit. But as the "over" shells were going near the reserves of the 4th Siberian Corps, which were in rear, the balloon was made to descend, whereupon the enemy's fire in this direction ceased.

The company then joined the retreat, and arrived at Mukden on September 6th. Later on it took part in the forward movement on the Sha Ho, accompanying the advanced guard of the 10th Corps.

On October 5th the balloon was filled, and made several ascents, which were especially useful in locating the positions of the enemy's batteries. The fire brought to bear against the balloon, on this occasion also, only resulted in some unimportant damage to the gasogene apparatus.

The company then fell back on Shahepou, and subsequently on Peitapou. For its eminent services the company was awarded three St. George's Crosses.

When the 2nd and 3rd Armies of Manchuria were formed, the company was utilised in making up the Balloon Battalion of East Siberia, and from this time onwards one hears of it no more.

In the fortress warfare but little experience was gained. At the commencement of the investment of Port Arthur, there was no balloon nor anything belonging to one in the place. The materials despatched to Port Arthur by the steamer "Manchuria" were captured by the Japanese. During the course of the siege, Lieutenant Lawron constructed a silk sphere and a balloon-kite made of cloth. But the envelope was not sufficiently impervious, and besides the arrangements for the production of gas were deficient, so that the Russians were unable to make use of balloons in Port Arthur.

The Japanese before Port Arthur employed a balloon of a special make, but which they kept too far in rear to obtain any very remarkable results. They were only able to observe the movements of the Russian ships, visible from afar on the glassy surface of the sea, and, moreover, these observations were not accurate enough to enable the guns of large calibre to be laid with any exactity.

It was only the capture of 203 Metre Hill—of which one has heard so much—which gave them a direct view of the harbour, and the possibility of an efficacious fire against the Russian ships. If the balloon service had been properly organised, the capture of 203 Metre Hill—which cost them so dear—might have been avoided.

The experiences gained with balloons in the Russo-Japanese War have not, then, been very great. But they have taught us, nevertheless, that the transport vehicles should be as light as possible, and also that the enemy's fire does not easily injure a balloon. Still more important is the lesson that, in this, as in other things, improvisations, such as were those of the Russians and Japanese, are of very little value, and that only a complete organisation and one fully exploited in time of peace—such a one as we possess at the present time—can aspire to good results in war.

PRECIS OF AN ARTICLE FROM THE "REVUE INTERNATIONALE."

SUPPLEMENT OF MARCH, 1907.

Automobilism and National Defence.

BY GENERAL VON PELET-NARBONNE.

Motors may be put to three uses from a military point of view:—

I.—For the transport of persons, *i.e.*, staffs, then for the service of reconnaissance, and the transmission of orders.

II.—For the transport of *matériel*, *i.e.*, to replace trains and convoys.

III.—As a weapon.

Motors are already employed on peace manœuvres, but their use in war will be on a much larger scale: one has only to remember that the battle front at Mukden was 100 miles. The Commander-in-Chief, telephonically connected up with his subordinates, directs the battle from the rear, but occasions may arise when it may be advisable for him to go to one or the other flank, for example, one night of a battle of several days' duration, to see the situation in person. This would only be possible with the aid of a motor.

As regards staffs, the great point to bear in mind is that they arrive at their destinations, having partaken of what food they require *en route*, fresh in body, and therefore more in a position to devote all their faculties to whatever work may be demanded of them immediately.

As an auxiliary to cavalry in the service of exploration motors are invaluable. It is frequently of the utmost importance to get reports back at once: a motor-bicycle can cover 6½ miles in 8 minutes while an orderly takes 25 to 30, and a bicycle 20 minutes. But a motor cannot be relied upon to go across country. At Koniggratz Lieut.-Colonel Count F. took 4 hours' riding at night to convey to the Crown Prince his orders to join in the battle: a motor would not have taken a quarter the time.

As regards transport, the following table shows what a great reduction can be effected by using mechanical means in *personnel* in the length of the columns of march and in the amount of daily traffic:—

1,500 4-horse vehicles	10,000 men	Column of 15½ miles.
200 motors towing 1,000 wagons.	1,200 engineers and 3,000 assistants.	Column of 5 miles.
500 motor-lorries	3,000 engineers	Column of 5 miles.

Had mechanical transport been available in 1870, it would have been used to bring up the heavy siege materials; these would have arrived sooner than they actually did, the reduction of Paris would have been expedited, and the war in consequence brought to a more speedy conclusion.

M. Dietrich, says the writer, prophesies the use of motors as an *arme blanche*, a kind of "vehicle with scythes and sickles;" no doubt surprises are in store for us in the future.

The motor, even such as it is at present, constitutes a formidable engine of war, and from the point of view of National Defence it is our patriotic duty to develop the industry as far as we possibly can.

In an article on the "Extension of the Fronts of Modern Battles" it is stated that in the South African War the average extension was one man a yard, in Manchuria 2 to 3 men a yard, whilst in all former wars the average ranged from 5 to 15 men a yard.

Is this a passing phase or not?

It depends, says the author in his summary, on several factors, the character of the enemy and his leaders (extensions justifiable against the Boers or Kuropatkin could not have been risked against a more enterprising foe), the object aimed at, the configuration of the ground, the artillery, and others.

There is a short article on the Channel Tunnel and its rejection by England. The writer's concluding paragraph is interesting and worthy of quotation *in extenso* :—

"The problem which exists for all continental powers, whether there is a tunnel or not, is this :—Can the safe passage of the Channel be guaranteed for a few days, that is, can we beat at any rate a portion of the English Fleet ? As long as she remains Mistress of the Seas, a tunnel under the Channel cannot present any danger to England.

"In this connection the development of aerial navigation presents far greater dangers. Those nations who interest themselves in England not remaining inviolable, ought to pay the greatest attention to aerial navigation, which has long since passed the realms of phantasy, and even at the present time permits of certain operations. It is certain, too, that the technical difficulties still remaining will be solved in the more or less near future."

ITALIAN PAPERS.[*Rivista de Artiglieria*, December 1906.]**(Third lecture by Capt. Giannitrappani of the Italian Artillery.)****III.—Considerations on and conclusions from the siege of Port Arthur.**

The following points are the outcome of a more careful study of the siege than it has been possible to set forth in the preceding articles, rather than actual inferences from the short summary of facts so set forth.

We are still far from knowing the whole history of Port Arthur. But as the Japanese have determined to publish nothing that may be of use to other armies, and the Russians will wait till some of the chief actors in the drama have disappeared, it behoves us to make use of every possible source of information. The Russian official papers are in many instances most interesting and important, while the work of the numerous war correspondents, especially the English, must be given careful attention. From all of these confirmation of old theories or the enunciation of new ideas must be sought.

A.—COAST DEFENCE

The superiority of land batteries over ships.—The naval operations round Port Arthur fully confirmed the theory that fire from ships would have little effect on coast batteries; while on the other hand the latter frequently succeeded in disabling Japanese vessels, although the armament was not very powerful. The damage sustained by the Russian batteries, whether in material or in men, was of the slightest, the concrete scarcely suffering at all.

The artillery duels between fleets and forts usually took place at ranges over 6 km. And as in the future guns and appliances will tend to improve the range will tend to increase. For ships to come closer merely means to augment the advantages possessed by the forts. The penetration of the land guns improves, while the angles of descent for the naval guns diminish, and consequently their power for harm decreases.

Bombardment.—The Japanese bombardment of the city and arsenal of Port Arthur, and the Russian ships in the Inner Harbour, produced effects which were more moral than material. The Japanese fire was unhampered by any land batteries on Laotishan, and

was regulated by the observation of a cruiser in the open, using wireless telegraphy. Indirect fire was always employed. But the damage done was small. And as the civil population was scanty the evil effects of the disorganisation and panic produced were not great.

But it would be otherwise in a large port with a great civil population. The panic and disorder could not fail to have serious consequences in such a case. It is therefore held that a sea fortress should have batteries to protect it from bombardment, and that these batteries should be situated at least 11 *km.* from the localities to be protected. This distance will ensure that no fleet can bombard even with 30·5 *cm.* guns.

Armament and ammunition for the batteries.—A most important deduction from the siege is that relating to the merits and demerits of the variety of calibres in the armament. As has been shown the Russians had howitzers of 28 and 23 *cm.* and guns of 25 and 15 *cm.*

The Russians assert that the 25 *cm.* guns gave excellent results. They were easy and rapid in handling and carried a mine-shell to a range of some 11 *km.* On the performances of these guns the Russian artillery officer Judenic bases a theory that guns in coast batteries need never exceed 25 *cm.* in calibre. With this calibre and their other advantages the guns would be able to hold their own against ships, even if armed with heavier ordnance. Moreover the rapidity of handling is much diminished with calibres over 25 *cm.* But as a matter of fact it would appear that on the contrary batteries should not be armed with inferior ordnance to ships; that ease of handling is only a matter of mechanism, and that guns of 30 *cm.* and over are a necessity for maritime fortresses.

The Russians do not hesitate to declare that the 15 *cm.* Q.-F. Canet guns with a maximum range of 13 *km.* were most effective at medium and short ranges especially against torpedo-boats, etc.

Guns of this type may be considered as the principal ordnance for medium and short ranges, and the defence of entrances to harbours. The Russian opinion is that nothing between 15 and 25 *cm.* is required.

The 57 *mm.* Q.-F. guns were not a success in the defence of booms, etc., against torpedo-boats and small ships endeavouring to force a passage into the Inner Harbour. It is therefore considered necessary to employ 75 *mm.* guns for these purposes; while for repelling landing parties Russian officers recommend Q.-F. field guns and machine guns, which should be kept under cover till required.

The old and much debated question whether direct fire or curved fire ordnance should preponderate in coast fortresses has apparently been solved by the Port Arthur experience in favour of the latter. The Russians praise their heavy mortars (28 *cm.* howitzers) highly, and say that the chief damage inflicted on the Japanese ships was due to the curved fire from these pieces.

According to the Russians, it would be advisable, instead of thinking about increasing the calibre of guns (against which the naval armour always offers the best protection), to increase the calibre of the mortars to 305 mm. and over, with the idea of perforating the armoured decks of the ships.

It will be seen that the Russians have not sufficiently taken into consideration the fact that howitzers cannot attain the range and accuracy of guns. However, at ranges under 10 km. since the protection of the armoured deck cannot be increased beyond certain limits without affecting the stability of the vessel, ordnance with curved fire will often be more effective than guns, so that a sea fortress which possesses batteries of both guns and howitzers will always be in a favourable position as against ships.

It may be remarked in this connection that the damage inflicted by the Japanese 28 cm. howitzers on the Russian vessels at anchor in the Inner Harbour was not as great as is generally supposed, the shell failing to penetrate the armoured decks. But in our humble opinion this observation loses much of its value when it is considered that the 28 cm. shell were of iron, and the powerful Shimose powder was not used for the bursting charges.

It is quite certain that steel shell with a high explosive charge and angles of descent of 70° (as was the case at Port Arthur) would have produced a much greater effect.

The 23 cm. mortar was said to be superior to the 28 cm. in accuracy, though naturally inferior in range and power.

Among the projectiles which constituted the ammunition, both of forts and ships, the most successful appear to have been the mine-shell. The Japanese used Shimose for these shells—this is an explosive of the lyddite type and of great power. The explosion of this powder produces heavy smoke and gases, with poisonous effect.

The Russians are now considering the adoption of similar projectiles, for their coast artillery, but to be of steel. The smokeless powder burster is to be abandoned in favour of the more powerful picric acid class of explosives. Also, the tendency is to increase the proportion of mine-shell in the ammunition.

Submarine mines and concealed batteries.—The most recent reports say that a ship struck by a submarine mine sinks at once only if the explosion takes place near the magazine, as happened in the case of the *Petropavlosk*. On the other hand, in other instances, ships struck by submarine mines were able to make comparatively long voyages to port.

From this fact Judenic draws an interesting conclusion. If, he says, submarine mines are not sufficient to sink a ship on the spot still less will shell, even of big calibre, be able to do it. Therefore it is useless to employ 305 mm. guns in concealed batteries to sink ships, which are trying to force a passage; it is better in his opinion to keep the heavy guns for long range work, and to utilise submarines and torpedo-boats, together with 15 cm. Q.-F. guns, for the defence of passages.

B.—LAND OPERATIONS.

Technical matters.—This siege was especially noteworthy for the technical means employed.

The first thing to be remarked on is the wire entanglement. This is of course not a new device, but it has never been employed to so great an extent before. The entanglements contributed largely to delaying the Japanese assaults. They were put up in front of all field works and trenches. Shell fire failed to have any effect on them, and so small parties of Japanese engineers were sent out with special wire-cutters. These men crept along the ground at night, and endeavoured to cut the wire lying down. The thickness of this wire, however, often defeated these attempts and endeavours were then made to destroy the supporting poles. This again was not successful, as it necessitated exposing the men too much. So another expedient was tried. Hollow bamboos, filled with a powerful explosive, were carried as near as possible to the entanglement, by men crawling prone on the ground. These bombs were then ignited, and thrown into the middle of the wire, which was destroyed by the explosion. The charge was probably a fulminate, and some black powder which produced thick smoke to hide the operators.

Besides this the Russians used a wire with a 500-volt current from a dynamo. But this device failed after the first time, for the Japanese cut the wire by using cutters with insulated handles.

Another (Japanese) device was to provide the men with shields to protect them against rifle bullets when cutting the wires. The first shields were too heavy, and if a man fell he could not get up again. Afterwards lighter shields were used.

From the beginning of the siege the Russians made great use of search-lights.

These were used to light up the ground suddenly, with the result that the Japanese assaulting columns were blinded by the rays, while at the same time a hail of shot was poured in on them from every available machine gun and pom-pom. The war correspondents who were present at the siege state that the rays of these search-lights illuminated the whole country as if it were broad daylight. The Japanese, who apparently were not prepared to combat this means of defence, looked upon it as one of the most terrible weapons wielded by the enemy. All the time which should have been employed in advancing was spent in finding cover from the implacable rays of the search-light. To such purpose were the beams used that after August the Japanese were compelled to abandon the tremendous night attacks which were the chief feature of the early days of the siege.

The Russians also employed star-shell during night fighting with some success.

From the earliest operations machine guns proved a most valuable means of defence in the hands of the Russians. These weapons were very mobile, being carried by two men. Their small size

made it difficult for the enemy to discover them and put them out of action. While on the other hand the Japanese were compelled to admit that the effect of the machine gun fire was terrible, and assisted the Russians largely in repelling the enemy's infantry attacks. At night the machine guns were employed to great advantage, in combination with the search-lights.

The small calibre Q.-F. guns with which the Russians were largely provided, appear to have had great moral effect on the Japanese, in addition to any material result. Moreover these guns were used most successfully against the Japanese machine guns.

The ancient instrument of war, which under the name of *hand grenade* had long ago been relegated to history, was brought once more into the light of day by this war of the twentieth century. It was very largely employed by both sides in the siege.

The hand grenade proved from the first to be most effectual in driving an enemy out of trenches, dead angles, etc., or for checking infantry assaults.

The Russians used empty common shell, or blind shrapnel for these projectiles, and often also the Q.-F. cartridge cases of small guns. The Russians had the greatest confidence in this species of weapon. The grenades were thrown by hand or shot from a kind of catapult. Some 18,000 were made.

The Japanese also used hand grenades very extensively. A light bamboo mortar, which was carried by two men, was employed for the grenades, when not thrown by hand.

The Japanese are said to have also had hand bombs filled with high explosives.

The Russians used land torpedoes of great size—up to 250 Kq. in weight—with a 1 to 2 minute fuze. These inflicted great losses on the enemy.

Mines, both automatic and electric, were largely employed by the besieged. But the high percentage of failures with electric ignition led to a preference for automatic mines and *fonjasses*. A favourite pattern exploded when men walked over it.

THE CONDUCT OF THE DEFENCE.

Characteristics.—Given the conditions obtaining at the beginning of the siege and the necessity for gaining time, the policy of the authorities in Port Arthur seems to have corresponded well with the circumstances. By an active external defence, and by utilising the ground the Russians compelled the enemy to spend two precious months in covering the 40 odd kilometers, which separated them from the fortress after the battle of Nanshan. In this the Russians were assisted by the caution displayed by the Japanese, who confined their energies to field operations until their siege park was ready.

The last line of the outer defences which was occupied by the Russians at the end of July did not, however, serve its purpose. This was the long line from Louisa Bay to the Taché Bay, across the heights of the Wolf. A turning movement on the left wing compelled

the abandonment of the position after three days' fighting, the Russians fearing to be cut off from the fortress.

The evacuation of this line left the enemy in full possession of the mountains of the Wolf, and this inconceivable mistake constituted a most serious loss to the defence. According to the opinions of experts, the Russians should have made a determined resistance on these heights. Probably had this been done the siege would have been delayed several months longer, for it was under this cover that the Japanese established their first batteries. This shows how necessary it is to dispute the possession of every point on which an enemy may plant his batteries.

However, the months which had elapsed since the opening of hostilities gave time to complete and strengthen the defences, especially the Roiusan heights. So that when the besiegers reached the latter they were confronted by an entirely new set of conditions.

The Russians assert that many difficulties were experienced in this work of strengthening the defences, through the lack of technical services and the want of practice in fortification, by the infantry. These authorities lay stress on the need for technical troops to be kept in a fortress in peace time, and for the careful instruction of the infantry in all kinds of fortification work. And this appears indeed to be a matter of much importance.

From the moment the enemy appeared before the fortress, the action of the artillery of the defence showed to a disadvantage. The high parapets of the works, the absence of armoured cupolas and the reluctance of the Russians to make use of indirect fire, all hindered the artillery in the struggle with the well concealed Japanese batteries.

On the other hand the Russian batteries were mostly sited on the tops of hills, and having no armoured protection were very soon seriously affected by the enemy's fire, with the result that their own shooting became entirely ineffective. The system pursued, as described by a Russian officer, was somewhat as follows. The sight of a Japanese shell sent all the detachments under cover. When the shell had burst, the men came out and loaded the guns. A second shell would probably now come in, and the detachment ran for cover. The next interval would be employed in laying the gun, after which another interlude would be spent under cover before the gun could be fired, and so on.

Another Russian officer, who took part in the siege, states that some 15 per cent of the guns were put out of action by the enemy's fire, and a large number became unserviceable through the erosion of the bore consequent on the continuous firing. He adds that on Port Arthur experience a fortress should have a reserve of ordnance of 120 per cent. Twenty per cent would replace the guns disabled by the enemy, and the remaining 100 per cent would go to replace those rendered unserviceable by the effects of their own fire.

In regard to ammunition he asserts that to provide against a twelve-month siege, each gun should be provided with 3,000 rounds,

These figures are perhaps exaggerated, but will serve to show the Russian deductions from the siege, though the Russian officers appear, as far as can be judged from their writings, to have had but an indifferent idea of modern methods in the use of the artillery of a fortress.

But the general system of defence compensated largely for the deficiencies of the artillery. The defence was in no sense passive, but rather of a most active description. Continual sorties were made, and every possible means brought into play to delay the advance of the besiegers. Medium and small Q.-F. guns were employed to especial advantage. The chief characteristic all through was the harmonious and close co-operation between technicalities and tactics, which had the best possible results.

It is not proposed to discuss the vexed question whether the honours of the defence are due to Stoessel or Kondratenko. It is sufficient to remember that the latter, with the brilliant qualities of mind for which he was so well known, organised the admirable active defence of the fortress, and the advanced works, and that this tangible proof of his powers rendered him extraordinarily popular with the troops. They held him to be the real soul of the defence; and General Stoessel himself admits this, and considers that Kondratenko's death hastened the surrender of the fortress. But it appears clear that General Stoessel was also the possessor of many admirable qualities. These, however, lay in the direction of maintaining an iron discipline and other matters not easily comprehended by the private soldier, and did not tend to endear him to the latter's heart.

HOW THE FORTIFICATIONS WERE AFFECTED.

It is well known that in the matter of the art of fortification the Russians followed the theories of General Velitsko. These were, generally, the separation of the distant defence from the defence of the immediate vicinity, movable armament, chiefly on railways, in the ceinture and an organisation of the defence which required great depth, with a central nucleus of a permanent character, provided with numerous bomb-proof shelters. But with the exception of the depth of the defences, which was carried out on all the fronts, Velitsko's theories were only capable of a partial application at Port Arthur. The reason of this was that the conformation of the terrain to a great extent prevented movements of medium calibre ordnance, and their removal from the chief forts, and compelled a junction of the communications both of inner and outer defences, in these forts. The main Erlung Fort is an example.

Certain other features of Velitsko's system were also omitted, such as the provision of mines in the parapets, which should be exploded when the enemy made a rush into a fort. The lack of these was afterwards bitterly regretted by the Russians.

The most evident defect lay in the defilade of the works. But on the other hand the profiles were very low and well constructed.

It is said that one battery was never hit for the reason that the Japanese never succeeded in locating it. It was placed between two hills.

However, the fortress of Port Arthur, although incomplete for the financial reasons already explained, appears to us as a fortress *sui generis*. The terrain, with its geographical configuration and geological constitution, of which excellent use was made, was the main element of strength, and enabled the field and temporary works to afford an unusually powerful resistance, and rendered them of unusual importance. It is enough to mention the Roiusan works (203 Metre Hill), the extraordinary resistance of which delayed the Japanese to such an extent, and the fall of which contributed so greatly to the surrender of the fortress.

If therefore the bombardment had considerable effect on the artillery of the defence, through the lack of flank protection and armour, this was not the case in regard to the works as a whole. The reason of this lay in the resisting power of the rocks and masses of concrete so largely employed in the construction of shelters, in which the defenders awaited the enemy's assaults in perfect security.

These results appear to support the theories of those (among them Velitsko's school) who hold that the larger calibre ordnance should be placed outside the main works, in batteries, which should be hidden, and provided with flank cover to the utmost possible extent, and that the advanced defence should be entirely separate from that of the inner works, so that the former should be enabled to hold out for the longest possible time.

Still, the resistance offered by the improvised works does not appear to have been sufficient to warrant their taking the place, in the future, of costly permanent works. An examination of the course of the operations shows that whereas with the semi-permanent works the fall followed very shortly after the enemy attained immediate contact, in the case of the permanent works a considerable interval (an average of two months) elapsed between the enemy's arrival on the counter-scarp and the surrender of the fort. It may therefore be confidently asserted that had the 203 Metre Hill works been of a permanent nature, their resistance would have been much prolonged, and therefore also the resistance of the fortress itself.

THE CONDUCT OF THE ATTACK AND ITS CHARACTERISTICS.

The extreme caution which characterised the Japanese strategy throughout the war was also manifest in the plan followed by General Noghi in the siege of Port Arthur. It was not till the 26th of July, two months after the Battle of Nanshan had opened the road to Port Arthur, that the first general attack took place. The reason was that not till this date had the concentration of the three divisions and the collection of the stores been completed.

But as in the field warfare extreme caution in strategy was united to great audacity in tactics, so also in this siege, hardly had the working of the parks been placed on a sound footing, and a

bombardment been carried out which was believed to have silenced the Russian artillery, than the famous infantry assaults commenced.

The negative results of these general attacks decided General Noghi on a complete change of venue, and he initiated the lengthy procedure of a regular siege. The section of the fortress between Fort Sungsushan and Fort Kikuan was selected for the attack. This was certainly the most strongly defended section of the fortress.

The choice of this section for the attack may expose the Japanese to criticism, and lay them open to the charge of an imperfect acquaintance with the real conditions in the fortress at the commencement of the siege. As a matter of fact, although an attack on the northern section had the advantage over that on the eastern section (both being of equal defensive power), that the railway could be better utilised, that the slopes to be surmounted were less steep, and that the line of these slopes was capable of being turned on both flanks; still it is none the less true that it was the western section, the Roiusan, which represented the weak point of the fortress, by reason of the insufficiency of the defences on 203 Metre Hill and in its vicinity. These defences increased during the siege itself, and were far inferior to those of the permanent works on the northern section.

According to competent authorities the choice of the western section for the attack would have shortened the resistance of Port Arthur by some months. For a strong concentration of artillery would have ensured the capture of the Roiusan crest, and at the same time prevented any assembly of the Russian reserves in the neighbourhood. It would then have been easy to turn the Antseshan permanent works from the south. The defences of the north and east fronts would then have been taken in reverse, and would have fallen at once.

However, the front having been selected, an advance was started by sap, but at a considerable angle to the line of attack, in order to obtain adequate protection. The Japanese trenches were constructed without parapets, but wide enough for a field gun and deep enough for men to march on foot, and yet remain under cover. They were maintained with extreme cleanliness, and often provided with bomb-proof shelters, which became more frequent as the trenches approached the enemy. There were loop-holes for rifles, and small expense magazines for cartridges. Out on the plain the construction of these trenches in the light soil was easy. But as they came near the fortress among bare rocks, the rate of advance decreased from some 100 metres a day to about 10. It has been calculated that the total length of the trenches reached 32 kilometres.

The work of sapping and mining was three times interrupted by a general attack. Although each time these attacks started from a nearer parallel to the Russian works, they invariably failed of effect. This was because the besieged troops, being unable to reinforce their men, kept them entirely under cover until the actual moment of the assault. The men being thus fresh and unshaken

were in a position to repel the most desperate of the Japanese attempts.

The Japanese assaulting columns were always followed by machine guns. As soon as a trench was carried, these guns took up a position on the captured ground so as in some sort to establish the capture.

At first the assaults were made at night. But when it was found that the Russian search-lights lit up the country as clearly as daylight, the subsequent attacks were made by day or at nightfall. This is a noteworthy detail, because the use of electric light will be more general in the fortress of the future. Daylight attacks were not, however, stopped by darkness, but continued without intermission until success or failure crowned the attacker's efforts.

It has been reported that General Noghi ordered his artillery to fire on the ground in rear of their own attacking columns, so that the latter would be unable to turn back. But as a matter of fact there appears to be no truth in the assertion. The Japanese guns continued their fire on the Russian trenches after their own troops had approached close up, to prevent the Russians using their machine guns. Naturally sometimes a shell burst over their own infantry—but the latter never flinched.

But it is doubtful whether a similar procedure would be possible with European infantry.

THE ARTILLERY IN THE ATTACK.

The failure of the infantry attacks has led to the expression of an opinion that artillery is no longer efficient. A careful examination of the question, however, will show that it is only the Japanese artillery, not artillery in general, to which this characterisation is applicable.

The deficiencies of the Japanese siege park have already been noticed. These were, however, aggravated by many circumstances other than the mere lack of medium guns. The conformation of the ground compelled the Japanese to use the good gun positions as observatories, the batteries being placed in rear; the reason of this was that all such positions were too close to the Russian works. Again the fact that in the early part of the siege the Japanese had no heavy long range ordnance at all, contributed largely to the failure of their attempts to damage the forts. The final result was that the Japanese artillery was completely unsuccessful in its task of preparing the way for the infantry attacks, and the latter in consequence proved abortive.

The arrival of the naval guns and the 28 *c.m.* howitzers certainly improved matters, but not perhaps to the extent that is generally supposed. The 28 *c.m.* howitzers were distributed along the three sections; on the north they attacked Roiusan and Table Mountain, with the idea of capturing 203 Metre Hill, and bombarding the ships in harbour. The others were used against the Erlung and Kikuan forts.

If, however, attention is directed to the prolonged resistance of the light works on Roiusan, and to the fact that the Erlung and Kikuan forts did not yield to gun-fire but to mines, it becomes apparent that the 28 *cm.* howitzers did not produce very striking results, in spite of their enormous expenditure of ammunition. This must be attributed to two facts:—First, that the steel powder shell which were intended for use against ships, had comparatively small effect on fortifications; and, secondly, that until 203 Metre Hill was taken the Japanese had very few suitable stations for observing fire. Individual rounds, like the one which killed General Kondratenko, produced considerable effects, but these were rather in the nature of accidents.

The circumstances which chiefly contributed to the failure of the Japanese siege train in attaining the standard of medium parks have been especially insisted on, for the reason that it is hoped to explain thereby that it was the particular weakness of this artillery which proved unable to cope with the strength of the fortifications. It should not, therefore, be assumed that siege artillery in general will be unable to fulfil its allotted functions, as has been asserted in some quarters. The Japanese authorities at the beginning were not prepared to undertake a regular siege. They had neither the numbers nor the quality of ordnance required, and they had to contend with the extremely difficult nature of the terrain.

Another deduction which has been drawn from this siege is that von Sauer's theories on the speedy reduction of fortresses are no longer tenable, and that there must be a return to the old methods of sap and mine. This again does not now appear to be a correct conclusion. It is well known that the Bavarian General required an enormous number of guns, and especially of curved fire ordnance, for carrying out his plans. On this count therefore there can be no comparison between the Japanese attacks at Port Arthur and his proposals. Moreover, as has already been explained, there was the terrain. The Japanese had no choice but to resort to the spade. But not every fortress presents the same combination of conditions as Port Arthur. More justly may it be said that military engineers and artillerists must never be bound slaves to hard and fast codes, but must always allow for local conditions and the circumstances of the moment.

Mention has already been made of the fact that the Japanese siege artillery was invariably concealed from view in the most perfect manner, and used indirect fire. Indeed the only batteries which suffered at all from the Russian fire were a few groups of naval guns, the detachments of which being unaccustomed to the indirect method proposed to use direct fire. The guns close up to the fortress used smokeless powder in order not to reveal their positions, others used black powder.

The profile of the batteries offered nothing of particular interest. Being entirely screened from view they were not sunk, but constructed

with high parapets and traverses and wide embrasures. The few batteries, which were not sheltered by natural cover on the other hand, were completely under ground, the excavated earth being carefully scattered in all directions so as to leave nothing to catch the eye.

Changes in the position of batteries were carried out with the utmost care to prevent their being noticed by the enemy.

This was carried to such an extent that if trees happened to grow near batteries in exposed situations, they were cut down at night, and transplanted to the new position of the battery. The Russians seeing no apparent difference in the landscape usually were completely deceived. This artifice was in such favour that if no trees existed near a position, the Japanese often transplanted some to the spot, so that they could be moved at will.

A complete system of telephones connected observers, group commanders, and the chief artillery officer. Each battery was provided with a map of the whole enemy's position, ruled in squares. An order by telephone giving the number of a square indicated the target with accuracy.

The chief artillery commander controlled the fire from a spacious observatory (a room of 5 or 6 metres size), cut in the solid rock and protected by concrete. It was situated at the summit of one of the Wolf Mountains. In the centre of this room there was a stone table painted white. A camera obscura was mounted so that it could be laid on any desired object, and the image projected on the table. All round were the telephones communicating with the divisional artillery commanders.

In this way it was possible to concentrate fire on any target, or to change the objective with the greatest rapidity. Such orders were not, however, given except in case of a general assault. Sub-ordinate commanders were as a rule allowed the utmost liberty of action, the sole condition being a report by telephone.

During the great general assaults General Noghi usually remained with the chief artillery commander. In the exceptional case that these two generals were posted in different observatories, we have it on Mr Ashmead Bartlett's authority that they were in close communication (by means of a telephone suspended round the neck). A portable telephone also maintained touch with the assaulting columns, so that the artillery commander always had information as to the effect of his fire and the needs of the infantry.

Far different from this perfection of organisation was the quality and quantity of the artillery.

INFANTRY IN SIEGE WARFARE.

The excellent performance of the infantry on both sides, but more especially that of the Japanese, has led to the expression of the opinion that in siege warfare the infantry is the principal arm, the artillery merely an auxiliary. This tendency has manifested itself in several European armies, particularly in the German. It

has found official utterance in the latter, even to the extent that manœuvres were to have taken place on these principles. The fact that the manœuvres eventually fell through would seem to point to a change in the ideas. But, however that may be, an examination of the subject will perhaps be of interest.

The Japanese army at the present time is at its best. It possesses a body of officers of simple habits, but excellently instructed and filled with the most profound sentiments of devotion to duty. Nine-tenths of the men are mere peasants who, being imbued with the well-known moral and religious principles which prevail in Japanese society, readily assimilate the military virtues. The foundation of the tremendous sacrifices performed by the infantry at Port Arthur, and the steadfast perseverance in all adversity and danger is therefore clear to see.

So also the Russian soldiery was of the best, since the greater part came from a peasantry accustomed to primitive modes of life, and looking for nothing in the way of comfort. Moreover, the soldier's limited intelligence, united to his splendid physical qualities, rendered the Russian fit for the most perilous tasks. This stolidity it was that enabled the Russian infantry to offer a resistance at Port Arthur which astonished the world. Similarly it strengthened him against continual reverses in the field, and made possible the step by step retirement of the army in Manchuria, which lasted a whole year and never became a rout.

But do the indisputably excellent powers displayed by the infantry of both sides warrant the assertion that that arm is to play a preponderant rôle in the future? This seems to be a moot point. It is very doubtful whether an army drawn from a civilised population of the nervous modern type could be trusted to show the same imperviousness to all moral shocks. A fact that must not be passed over in silence is the extent to which, as shown by this war, reliance must be placed on reserves; bodies which are usually least fitted physically and otherwise to enter on a campaign. The Japanese army itself presents several examples of the failure of the city-bred elements.

The English General Hamilton who was attached to the I Army relates an incident in this connection, showing the unreliability of the factory-bred recruit. A certain regiment of the reserve, full of men from an industrial centre, refused to leave the trenches for the assault of a redoubt at Port Arthur. The regiment was disgraced, and put to menial labour for six weeks, after which it begged to be led under fire again.

It is evident that the Japanese Empire started its wars at an opportune moment. In the future it is probable its subjects will not always be so heroic.

This much, however, is certain, that in all armies the positive qualities of the infantry must be developed, and the negative qualities eliminated; though, inasmuch as the military virtues decrease as civilisation increases, the task is far from easy.

But to return to the point: it does not appear that the theory of the greatly increased value of infantry in siege warfare can be upheld. Rather is it necessary to pay more attention to the training of infantry, especially of second line troops, but not to extend its action beyond the limits already assigned. At the same time the mainstay of siege warfare, the artillery, should be strengthened more than ever.

Could Port Arthur have held out any longer?—This is a problem that has been widely discussed. It was first brought into prominence by the official reports on the condition of Port Arthur, made by the Japanese some months after the surrender, and also by the Russian inquiry into the matter. These depict a state of affairs very different from that represented by Stoessel at the time of the surrender.

The want of ammunition for the guns, and the lack of medical necessities for the 16,000 sick and wounded were the immediate causes of the surrender. But there were still 25,000 men under arms, and the resistance could have been prolonged.

Had such a resistance taken place, what practical advantage would have been obtained? Certainly not the raising of the siege. All hope of a relieving army had long disappeared. Nor would the port have been a refuge for the Baltic Fleet. The bombardment and the submarine mines prevented that. Nor probably would any further losses have been inflicted on the besiegers. In fact the positions occupied by the Japanese would have enabled them to bombard the city and the inner works without exposing the infantry at all. The artillery alone would have completed the overthrow of the fortress, without weakening the besiegers, and without adding to the glory won by the besieged.

On the other hand, from a purely military standpoint, the further resistance of the fortress would have been of immense advantage to the Russians. For it would have kept the besieging troops immobile, with corresponding benefit to the Russian army in Manchuria. It is even permissible to believe that another month of the siege would have turned the Mukden battle into a Russian victory. But as a matter of fact, was a further resistance possible in the moral condition of the garrison? Many signs go to show that the morale of the troops was not such as to hold out hope of much further resistance. The *Novi Krai*, the official newspaper in Port Arthur, which had been consistently sanguine, became curiously pessimistic towards the end. There was an unfortunate rivalry between the land and sea forces, especially after the death of Kondratenko had deprived the fortress of his tactful influence. Other elements of discouragement were not wanting, and Stoessel weighing everything in his mind, probably thought it better to make the surrender while the reputation of his troops was still at its height, rather than await other and possibly less honourable eventualities.

The verdict of the Commission of Inquiry would appear to show that Stoessel failed to fulfil the highest duties of the commander

of a fortress. But the whole question is so involved and so replete with delicate complications, that it is preferable to leave the task of passing judgment to posterity, when a clear perspective will enable a sound sentence to be passed upon the painful events of this time.

CONCLUSION.

It was not intended to enunciate any formal principles in connection with the construction of a fortress, its defence and its attack. Generally speaking, it may be said that conclusions drawn from a survey such as this are of limited value, and serve more to confirm or destroy hypotheses already made, than to establish new principles. In the particular case of Port Arthur neither defence nor attack were sufficiently modern in technical character to give us any new indications.

Above all the siege of Port Arthur is a magnificent example of the possibilities of energy. The energy of the two adversaries succeeded in prolonging the struggle for six months, with details worthy of an age of heroes, until the stronger will prevailed.

To conclude, however, one of the main factors of the Japanese victory may be noticed. This is the admirable harmony and good feeling that invariably prevailed between the army and the fleet, affording an example as worthy of imitation as any in history. This concord was very remarkable throughout the war, but nowhere more so than in the operations round Port Arthur, to the success of which it so largely contributed.

It is sufficient to remark that the real foundation of this apparently spontaneous concord between the Japanese army and the fleet is the systematic and constant co-ordination of all its constituent elements, which forms the military power of the Empire. And in this system, which preserves all energies, lies the sure and certain secret of victory.

GUNS *vs.* BALLOONS.

BY CAPTAIN C. GREGORY, 19TH LANCERS.

Translated from "La Revue Militaire Suisse."

The balloon has been called upon to play an important rôle in the wars of the future. It is, therefore, only natural that modern military technical science should interest itself as to the means of thwarting, or even annulling, the employment of the captive balloon as a source of obtaining information.

For many years, France, Germany and Austria have carried out trials of fire against balloons; the results have always been very variable. As regards ourselves (the Swiss) similar experiments could not be attempted until a balloon company had been formed. The first series of such experiments took place on the 25th October 1906.

The balloon experimented on was the first that the Confederation had procured, and whose guarantee, for three years, had just elapsed.

It was moored in the neighbourhood of Schofflisdorf. In place of the ordinary car, an empty wooden box was substituted, in which were placed five figure targets. In consequence of some error in filling, the upper end of the balloon pointed towards the ground, whilst the lower end was somewhat more raised than it ought to have been. This abnormal position, however, had no important results on the fire. The Zurich battery received orders to open fire on the balloon, which was supposed to have been run up by an enemy, in the vicinity of Schofflisdorf. Colonel Schmid directed the fire, the battery coming into position on the "Heitlieb" to the west of Neerach.

On account of a dense fog the balloon could not be located until 12-30 P.M. The battery at once opened fire, and fired seven groups of continuous rapid fire. The first group, which was fired with an elevation of 160 and plus 2 was easily observed; the range was too long, the shells bursting from 200 to 240 metres behind the objective. The second group was short (140 elevation), between 60 metres minus and one round 80 metres plus. During the fire of this group, a gradual subsidence and descent of the balloon was noticed. The five following groups were fired with elevations of 148, 150, and 146. With that of 146 observations at the target showed 100 minus to 180 plus. The balloon descended more and more, and at the end of the seventh group, it disappeared behind a little hillock and was lost to view from the battery. The director of the practice announced that 9 minutes 40 seconds had elapsed from the first round until the last.

Two only of the five dummy targets in the car were facing the battery, they each showed five hits, all by shrapnel bullets; the other three figures showed no hits.

From observations taken at the butt, it was apparent that the first two groups were mainly responsible for the results. The envelope of the balloon was shot through and through by shrapnel, one of these rounds had torn a hole about 10 inches long.

The result of the practice was, therefore, very satisfactory, especially when we take into account the distance, about $2\frac{1}{2}$ miles, and the height of the balloon above ground, approximately 1,800 feet.

It appears that the distance of the balloon from the firing line, as laid down in our regulations, is insufficient (3,300 yards at the commencement of an action, and 4,000 to 4,500 during it).

Taken into consideration the novelty and importance of this fire against balloons, a few general remarks may not be amiss.

The estimation of the distance is rendered extremely difficult by the absence of aiming points, such as are usually found on the ground. However the correct appreciation of the distance is the first and most necessary condition for rapid success; amongst other conditions, the balloon must be within effective range of time-shrapnel, if not the fire will be without effect.

It is, therefore, indispensable to make every effort to ascertain the range, before commencing the practice. In Germany the following procedure is adopted.

Two officers, provided with large scale maps (1 inch or 2 inches to a mile), incline outwards, left and right from the position of the battery, and ride out to some point on the ground shown on the map, from which other points, also shown on the map, are visible, and which are in the same vertical plane as the balloon and their points of observation.

Thus (fig. 1) the balloon is in the same vertical plane, as regards the right observer, as the village and the edge of the wood, while as regards the left observer, it is in the same plane as the cross-roads and a point on the river's bank. This done, the officers ride back to the battery, and find on one of the maps the two rays passing through the points marked on the map. The point of intersection of the rays gives the projection of the balloon, and also approximately its horizontal distance. If this distance is more than the effective range of time-shrapnel, the battery should advance to closer range.

The height of the balloon above the battery is determined by the quadrant angle.

As regards the observation of fire, the battery commander can only verify those shots, which burst in front or behind the objective, and these only on the condition that the smoke of the burst is in the line of sight. Frequently the shadow of a little cloud of smoke is seen against the envelope of the balloon, in this case, the shot is evidently in front of the target. But more frequently, the smoke is observed outside the line of sight; in this case use should be made of auxiliary observers; one may be sufficient, as was the case at Neerach, but if there are enough officers, it is better to use two,

because the exact position of certain shots can only be fixed by two observations, as we shall see below.

The observers take up positions from 40 to 50 yards to the right and left of the battery. They should be able to see from their positions both the battery and the balloon; should this not be possible, intermediary posts for the transmission of signals should be established.

The task of the observers is to inform the battery commander, whether the shots go right or left of their line of sight, with regard to the balloon; by another signal, they indicate whether the bursts occur in the vertical projection of the balloon, it makes not much difference whether they burst at the same height or above or below. If there is only one observer, only his observations of bursts in the vertical projection can be relied upon.

If the time of flight is properly calculated, the burst should take place above the line of sight, or which in practice comes to the same thing above the line of vision from the battery to the balloon.

Figure 2 shows the situation in which some observations of the bursts can be made by the different observers: case A with two observers, case B with one only.

Let us examine a few of these cases.

The 1st is seen in the vertical projection by the battery commander (B. C.); to the left of the balloon by the right observer (R. O.); to the right of the balloon by the left observer (L.O.). It is evident, therefore, that the shot was in front of the target, even had it not been observed in the vertical projection by the B. C. In case B, we would have arrived at the same conclusion, but had the burst not been seen in the vertical projection by the B. C. the observation would have been doubtful.

Round No. 2 went behind the target, as it was observed by the B.C. in the vertical projection, by the R.O. to the right, by the L.O. to the left.

No. 3 A could not be observed by the B. C., but as it was seen by the L. O. in the vertical projection, and by the R.O. to the left of the balloon, it must have been short. In case B, this observation would have been doubtful.

No. 4 A doubtful to the B. C. to the L.O. in the projection, to the R.O. to the right, therefore long; in case B, as No. 3 doubtful.

Case A, No. 5: invisible to the B. C., to the left of the balloon by both observers, therefore doubtful.

The result of this example shows that out of five rounds with two observers, four could be accurately determined, whereas with only one observer, only two could be.

As regards the fire itself, the procedure would be the same as against a moving target.

When the balloon has got its balance, time fuses must be used from the commencement; in the case of the balloon being seen before it has been run up, percussion shrapnel would naturally be employed, changing, once the range has been found, to rapid fire.

As regards the laying of the gun, it appears that aim should be taken direct on the balloon, without employing the quadrant angle, as by doing so the movements of the balloon can be followed. Should the balloon be momentarily hidden by clouds, it would be advisable to employ, for aiming, auxiliary marks and the quadrant angle.

2

1

5



Wood



River

Fig. 1



Balloon



Cross-roads

Village



Judging Distance

REVIEW.

Some Notes on the Horse.—By Guy H. Guillum Scott, Esq., formerly Farrier Sergeant, City Imperial Volunteer Mounted Infantry and Inns of Court, Rifle Volunteer Mounted Infantry. Price 1 shilling. Published by William Clowes and Sons, 23, Cockspur Street, S.W.

The author of this little pamphlet is a well known barrister, who served with the City Imperial Volunteers during the South African War and has for a long time been a member of the Inns of Court Rifle Volunteer Mounted Infantry.

As is well known, the members of the Inns of Court are barristers, solicitors and law students. With all the keenness in the world many have not had much practical experience with horses, or their care. It is to supply such knowledge that Mr. Scott has brought out his little pamphlet.

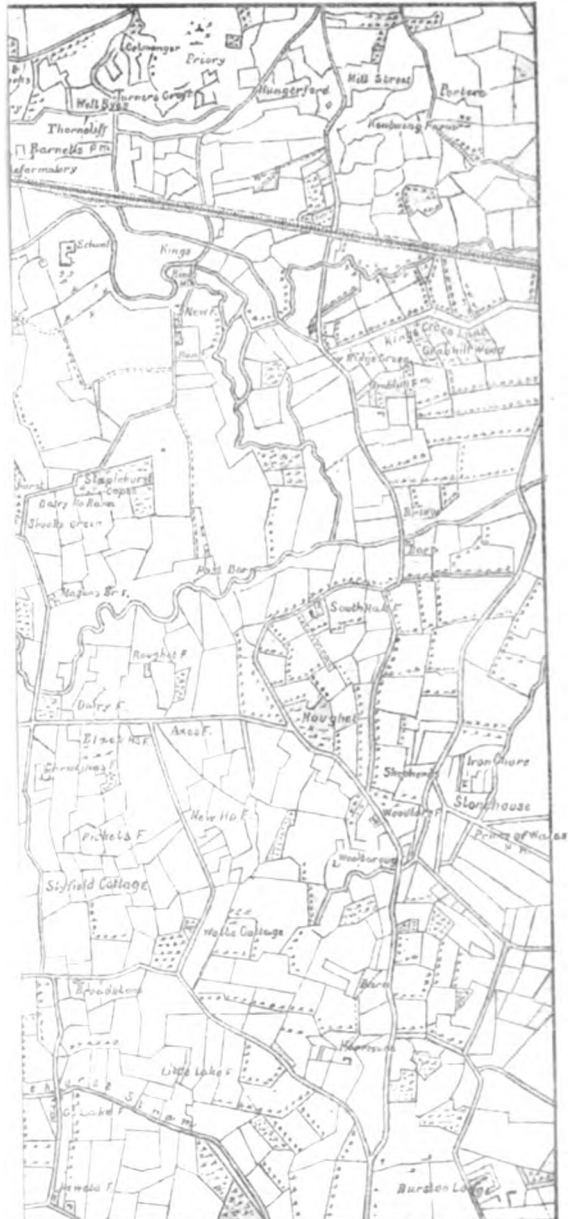
It is the custom in the Inns of Court to give a series of lectures during the winter months on various military subjects, and amongst others, stable management and the care of troop horses. This subject has been taken by the author, and the pamphlet is a synopsis of his lectures.

The notes are sound and the author from practical experience knows what he is dealing with. He only treats about the management of the troop horse and his gear while in health—matters that every mounted soldier ought to know about. He avoids getting out of his depth in the treatment of disease—an error so many horsemen and officers are so prone to make.

The notes on the construction and fitting of saddles are particularly valuable. They are matters that but few of even the most experienced horsemen know much about, and a careful study of the notes will, we are convinced, save many a horse getting a sore back.

The little book "Notes on the Duties of Volunteer Mounted Troops" that is alluded to, is written for the use of the "Inns of Court Rifle Volunteers" by three members of the Corps.

MAP J.



RESULTS OF THE TACTICAL SCHEME COMPETITION, JULY 1906.

WINNING SOLUTION.

BY VIRTUTIS FORTUNA COMES. (LT.-COL. H. F. LOCH, 1ST BRAHMINS.)

GENERAL IDEA.

A RED Force, consisting of one Division, has been defeated by a BLUE Force of two Divisions and is retreating northwards by the roads parallel to the LONDON and BRIGHTON Railway.

SPECIAL IDEA.

On arriving at BONEHURST BRIDGE at 1 P.M. on the 15th October, with the Main Guard of the RED REAR GUARD, strength as per margin, the Commanding Officer, Colonel Z, received the following message :—

RED REAR GUARD TROOPS.
 1 Battery, R. H. A.
 2 Squadrons Cavalry.
 4 Companies Mounted Infantry.
 1 Det Mounted Sappers (40 strong).
 1 Battery R. F. A.
 2 Bns. Infantry.
 Medical details.

RED HILL CHURCH :
15th October.

No. 179.
 " Owing to a break-down of the transport it is absolutely necessary that you should delay the advance of the enemy till nightfall (7 P. M.)"
 Despatched (Sd.) A. B. C.,
 11-15 A.M. A.-A. G., 1st RED Division.

Heavy rain has flooded the streams, which are only crossable by the fords and bridges.

Colonel Z's Cavalry is in touch with the Cavalry of the BLUE enemy about 6 miles south of the south edge of the map.

QUESTION I.

As Staff Officer to Colonel Z write—

- (a) A brief appreciation of the situation (for his use).
- (b) The orders which would be issued if your appreciation is accepted.

QUESTION II.

By 5-15 P.M. in the afternoon the BLUE enemy are threatening to outflank you on both flanks and have developed such strength of infantry and guns that the further retention of any position you may have taken up would be dangerous.

- (c) What orders would you now issue to *carry out the task* entrusted to you ?

REMARKS BY THE ADJUDICATING OFFICER.

The appreciations sent in by most of the competitors were not good. An appreciation does not mean a detailed, much-padded repetition of the situation as given in the Scheme; neither does

it mean a long description of the topography of the country as read from the map. Further, the definite plan of action, with which every appreciation should end, should be as shortly expressed as possible and should not be burdened with such detail as regards particular units, as may be necessary in the orders, by which the plan is put into force.

An appreciation of a situation is a review of the whole situation in which the various factors of time and space, topographical features of the country, the climate and season of the year, the condition, relative strength, moral, and previous experiences of the troops engaged, and any other factors, special to the particular occasion, are discussed not in a general or vague manner, but in *their special bearing on this particular situation*. The plan to be followed will then appear as the natural logical outcome of this discussion. In writing an appreciation logical sequence combined with brevity should be aimed at. The use of vague and general terms should be avoided. A good example of such general terms is given by one competitor, who says, "*our vulnerable points are our front and flanks.*" While about it he might have added the rear as well!

In this particular scheme very few of the competitors appreciated the danger to their right flank from the possible possession by the enemy of HORSE HILL or the ridge NEWCASTLE-WOLVER'S FARM, and the covered approach to SEDLOW BRIDGE, which this high ground offered to the enemy, and which, being on the main LONDON-BRIGHTON road was most likely soon to fall into the enemy's hands. Several competitors appeared to think that the pursuing force must of necessity be on that road, and on that road only, which was being used by the retiring Red Rear Guard. This would by no means be the case. A force of 2 Divisions in pursuit would naturally make use of every road it possibly could and would certainly not neglect such a good road as the main LONDON-BRIGHTON road, which leads over SEDLOW BRIDGE.

In some of the papers received there was a perfect mania for demolitions. One gentleman required his 40 Mounted Sappers to "*utterly destroy*" 1 railway and 4 other bridges and to prepare for demolition 1 railway and 8 other bridges, these bridges being spread over some 14 miles of river!

Another required these same Sappers to link up with telephones his units, spread over some $3\frac{1}{2}$ miles of front, with their Commander in a central position!

The choice of the greater number, who elected to defend the forward position south of SALFORD, fell on BURFITT'S FARM HILL as the principal artillery position. Now this hill is less than 2,500 yards from HORSE HILL, and once the enemy's artillery had occupied that hill the retirement of the Red Artillery from BURFITT'S either by the LONESOME FARM or SALFORD BRIDGES would have been impracticable.

While most of the competitors occupied a very extended front only three divided the artillery along that front. In many cases also the employment of the Horse Battery, when the Cavalry was driven in, was not considered or allowed for in the scheme of defence.

A few competitors started with the idea that the whole of their force was collected at BONEHURST BRIDGE under their hand. The scheme, however, distinctly laid down that the Red Cavalry was 6 miles south of the edge of the map. A competitor was thus at liberty to suppose that his Horse Battery and Mounted Infantry was with the Cavalry or not. The appreciation would naturally deal with such a supposition and with the reasons for making it. In all such schemes it is essential that the would-be solver starts with a clear idea of the disposition of his force at the moment of the given situation. This disposition should, as far as possible, be a normal one, such as is likely to occur in real war.

The replies to Question II of the Scheme do not call for any remark, with the exception of that given by "*Bushido*." This officer in reply to Question I took up an extensive position along the BONEHURST BRIDGE stream with his left flank stretching out to WOOLBOROUGH FARM, his right being a detachment on HORSE HILL. This detachment consisted of 4 guns R. F. A., 4 companies M. I., and 2 companies Infantry. Reinforcing this detachment with 2 guns he orders it to *attack* the enemy, while from the other flank the Cavalry and Horse Battery are also to make a counter-stroke. The task given to his troops, already exhausted by their previous exertions, is an impossible one. Troops for a counter-stroke should be fresh from a reserve kept for that purpose. The counter-stroke should be a combined movement. Two disjointed attacks 5 miles apart must be defeated in detail, irrespective of the fact that they are not in sufficient strength "*to sustain their attacks at all costs long enough to delay the enemy's advance till 7 p.m.*," as ordered by "*Bushido*." They would certainly be defeated and the Red Rear Guard would be badly compromised in endeavouring to extricate them.

Many competitors spelt the French word *moral* wrong. So spelt without an *e* it means *spirits*, the courage and discipline of an army; with the *e* as *morale*, it means *morals*, such as chastity, honour or other virtues.

The following paper by "*Virtutis Fortuna Comes*" has been adjudged to be the best of those received, though that by "*Nosce tempus*" is considered to be *proxime accessit*.

SOLUTION BY "*VIRTUTIS FORTUNA COMES*."

Answer I (a).—Appreciation of the Situation.

Our Main Body (Red) having fallen back after some loss before the superior forces of the enemy (Blue) would have made good its retreat without serious contact with the enemy had it not been delayed at RED HILL by a break-down of the transport.

From the message just received the G. O. C. expects to be able to continue his retreat at nightfall. It is therefore the business of the Rear Guard to take up a position, so far south of RED HILL that the enemy will not be able to shell that place, and there delay the enemy till nightfall.

The enemy's cavalry is now (1 P.M.) some 6 miles south of the map, and we may reckon that it cannot reach the line of the BONEHURST stream until 2 P.M., perhaps later, considering the opposition which our mounted troops may be expected to offer it. We can also reckon that the enemy's artillery and infantry are some 4 to 6 miles in rear of his cavalry, so that we may expect the heads of his columns to reach the vicinity of the stream between 4 and 5 P.M. As, no doubt, the reconnaissance of our position would be carried out as soon as the enemy's cavalry reach the stream, his plan of attack and orders would be issued as soon as the columns arrive, and we may expect the attack to develop soon after 5 P.M. There will therefore be nearly 4 hours during which the dispositions for the defence and preparation can be made; and there will be 2 hours of daylight during which the Rear Guard must repel all attacks.

The best position that can be found near the BONEHURST stream to carry out the above is the high ground BURFITT'S FARM-PICKETT'S FARM-NEW HOUSE FARM. This covers a front of 4 miles, and so is too large for the Rear Guard to hold strongly, but as it is its business to make as much show as possible, to try and impose on the enemy, the occupation of such an extended position may be of use.

The right (facing the enemy) flank is covered by the RIVER MOLE, which can only be crossed at two points somewhat high up on the flank. The whole of the front is covered by a stream, which can only be crossed at the 5 bridges or crossings. The left (facing the enemy) flank is the weakest. It has no particularly strong natural feature on which to rest, and there are several roads to the east, by which the enemy can turn this flank.

As the country is cultivated and enclosed, it is best suited for infantry in attack and defence; the hedges and ditches providing good cover from view and fire. The action of cavalry, as cavalry, would be hampered by the enclosed state of the country; and the movements of the mounted infantry would be slow and circuitous.

The proposed occupation of the position is shown on the attached map and the following Operation Orders, Answer I (b) gives the detail. One and a half M. I. companies are first retained as a temporary reserve near PERRY COPSE, but are not shown there on the map. They are shown on the line they would approximately occupy to cover the retirement of the infantry.

No directions have been given by the G. O. C. about the preservation of the bridges, and as the orders to delay the enemy are imperative every means must be taken to do so. The Mounted Sappers will therefore destroy such bridges as they can in the time and with the explosives available. As there is a good deal of cover

near the PINDERFIELD and BONEHURST BRIDGES, which would materially assist the enemy's advance, should he succeed in crossing at these points; the Sappers had better attend to these bridges first. Officers Commanding corps will at once commence to strengthen the positions they occupy without further orders. The signallers of corps and smaller units will endeavour to pick up communication with the O. C. REAR GUARD, near PERRY COPSE. The signalling officers should see to this without orders and should also connect with RED HILL.

Answer I (b).—Orders issued.

The following reply to the A. A. G. Division is sent.

No. I.

To

FROM

A. A. G.

O. C.

RED DIVISION.

RED REAR GUARD.

BONEHURST BRIDGE, 1-5 P.M., 15th October.

Your message received. Has taken $1\frac{3}{4}$ hours coming 4 miles.

Inform G. O. C. I shall occupy position HORLEY LODGE PICKETT'S FARM. If forced back will occupy high ground between PELRIDGE WOOD COMMON and SHOCK'S GREEN. Can G.O.C. spare a battery and some infantry to protect my flanks, if the enemy endeavours to out-flank me. A battery near the Reformatory would be of material assistance.

If second Reserve Ammunition of Corps with the REAR GUARD has reached RED HILL send it to await my orders on the road near high ground marked 250 just east of railway and north-east of SMITHS FARM.

(Sd.) Z., COLONEL,

Commanding Red Rear Guard.

Operation Orders by Colonel Z., Commanding Red Rear Guard.

BONEHURST BRIDGE, 15th October 1906.

1. Our Cavalry is in touch with the enemy some 6 miles to the south and is falling back before superior forces.

2. Our Main Body is blocked at RED HILL by a break-down of the transport and the G. O. C. directs the REAR GUARD to delay the enemy till nightfall (7 P.M.)

3. It is my intention to take up a position on the high ground BURFITT'S FARM, HORLEY LODGE, PICKETT'S FARM, north of the BONEHURST stream, and to hold this position until I issue orders for the REAR GUARD to continue its retreat.

4. As the Mounted Troops approach the BONEHURST stream they will clear the front as follows:—

1 Squadron Cavalry, 10 Mounted Sappers. To retire along the REIGATE-LONDON ROAD, watching the roads to the west and opposing the advance of the enemy.

This detachment will get into communication with the M. I. at KENNERSLEY. If forced back to the RIVER MOLE, a stand

must be made at SEDLOW BRIDGE, until the main body of the REAR GUARD retires. This bridge may be destroyed.

Two companies M. I. will retire across the BONEHURST stream, making use of any of the crossings from PINDERFIELD BRIDGE to GREAT LAKE FARM. They will detach one section to KENNERSLEY and one section to a position near BURFITT'S FARM to watch the line of the river from KENNERSLEY to PINDERFIELD BRIDGE. The remaining $1\frac{1}{2}$ companies will form up north of PERRY COPSE and await orders.

1 Battery R. H. A., 1 Squadron cavalry, 2 Companies M. I., will move north and to the east by the road passing HARRISON'S and WATT'S COTTAGE, coming into the general line of the main position near NEW HOUSE FARM. These troops will be under the command of the senior officer on the spot. They will watch the roads south and east and will protect the left flank of the position.

5. The O. C. Battery, R. F. A., will select a position near HORLEY LODGE and will come into action.

6. The 1st Battalion Lancashire Fusiliers will occupy the front of the position from PINDERFIELD BRIDGE to the LONDON AND BRIGHTON RAILWAY.

The 2nd Battalion Lancashire Fusiliers will hold the RAILWAY and the line of the river east of it, up to and including GREAT LAKE FARM.

The Officers Commanding will make their own dispositions to deny the river crossings to the enemy and will entrench.

7. The O. C. Mounted Sappers will, after despatching 10 men to accompany the squadron on the REIGATE-LONDON ROAD, employ his men, as far as explosives are available, in destroying the bridges over the stream. The PINDERFIELD and BONEHURST BRIDGES should first be destroyed. The O. C. will report to me on the completion of this duty.

8. Major B., R.A.M.C., will select the sites for dressing stations and will pass the wounded on to RED HILL.

9. The Second Reserve Ammunition will be halted on the high ground between PELRIDGE WOOD COMMON and SHOCK'S GREEN.

10. My position will be near PERRY COPSE. A central signal station will be established here with which all signal parties will communicate. *Issued 1-20 p. m.*

(Sd.) Z., COLONEL,

Commanding Red Rear Guard.

Dictated to officers of troops with Main Guard.

Copies to O. C. Mounted Troops.

An officer would be sent to the proposed second position to report on it.

Answer II (c).—Arrangements for retreat to second position.

Assuming that the REAR GUARD has been able to retain the positions occupied, I consider that by retiring to my second position

my force should be able to delay the enemy there till night-fall, and thus carry out the task allotted to it.

I should therefore order the M. I., hitherto held in hand, to extend, and the Infantry to retire, the firing line to fall back first and to move to the second position, the second line following, followed by the infantry in the third line.

The Mounted Troops must maintain their positions until the Infantry have crossed the SALFORD MILL stream. The M. I. at BURFITT'S FARM and at KENNERSLEY would be ordered to retire across the stream to LONESOME FARM and to hold the bridge there.

The Battery R. F. A. would retire by the SALFORD BRIDGE ROAD to a position near the PRINCE ALBERT P. H. The Battery R. H. A. to a position near STAPLEHURST COPSE.

The remainder of the M. I. and the Cavalry would retire at a trot or a gallop according to the proximity of the enemy, a squadron of Cavalry and one company M. I. being directed to KING'S MILL to cover the flank. The rest of the M. I. to form up in rear of the second position and await orders.

The above is a summary of the orders which would be issued, verbal orders would be sent or given to the corps nearest and written orders to the rest.

FURTHER REMARKS BY ADJUDICATING OFFICER.

With reference to the above it is only necessary to remark that, though the best of those sent in, the above orders have a good many faults, which may shortly be noticed.

It would be better not to mention the break-down of the transport. Any such mention is bound to depress the spirit of the troops.

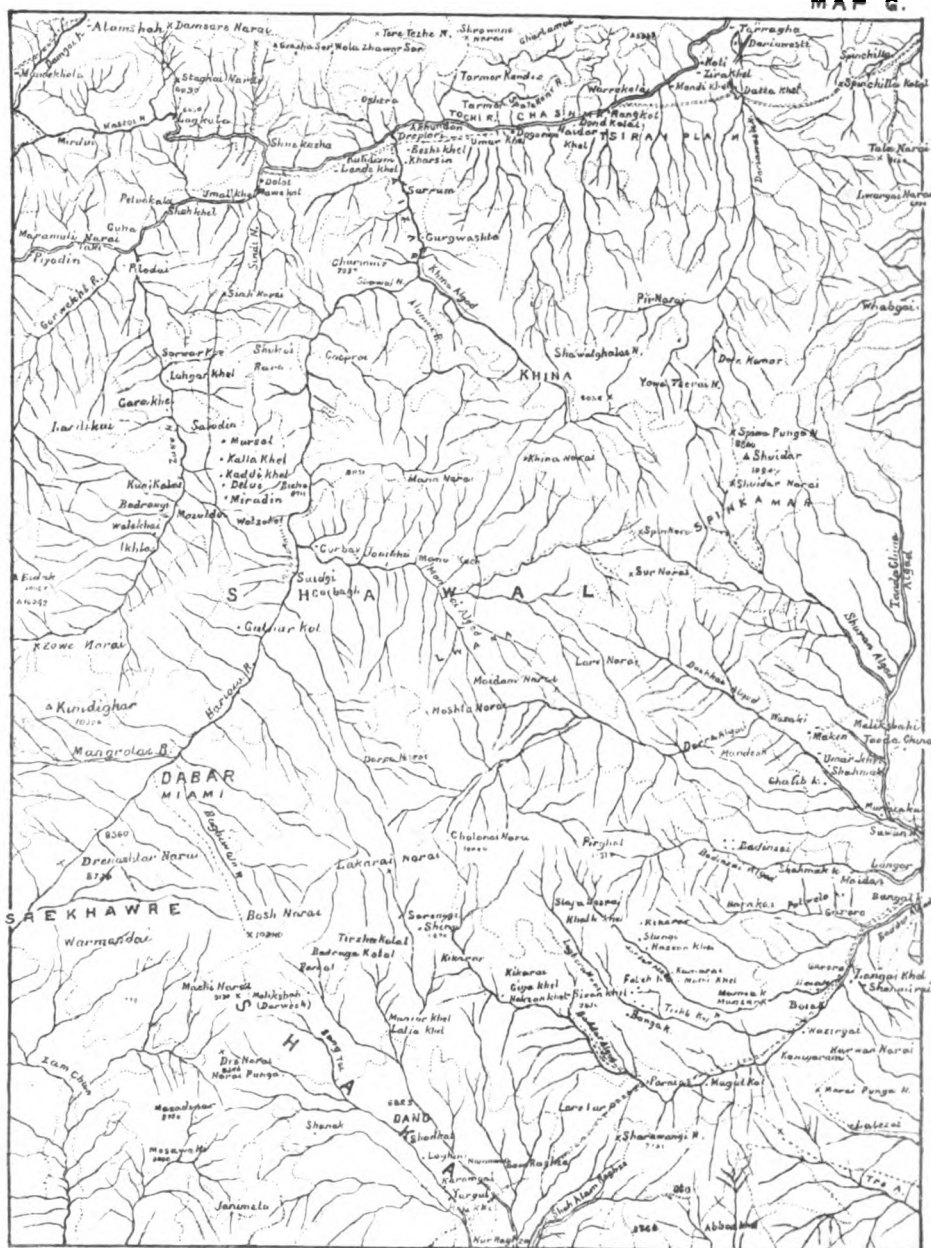
The order to the SALFORD BRIDGE detachment should be explicit, either to destroy or to preserve the bridge.

The two sections into which the position is divided should be kept separate and be more clearly defined. Each portion should in such circumstances have some artillery allotted to it. The Horse Battery being left under the Cavalry Commander.

The orders would be written by the Staff Officer, without the use of the personal pronoun "I", and they should have a number. A copy should be also sent to the G. O. C. of the Main Body at RED HILL.

It would have been better if the actual orders asked for had been given in reply to the second portion of the Scheme.

MAP C.



APPROXIMATE SCALE 1:5 MILES

Miles 5 4 3 2 1 0 1 2 3 4 5 Miles

Camel Road.....
Mule Road.....
Footpath.....

TACTICAL SCHEME COMPETITION, JANUARY 1907.

WINNING SOLUTION.

"BY NUNQUAM NON PARATUS." (MAJOR K. K. KNAPP, ROYAL GARRISON ARTILLERY.)

GENERAL IDEA.

DOTOI and DATTA KHEL are posts on the Line of Communications of a force operating to the east. The Base is about 50 miles west of PIYADIN. The garrisons of the above posts are :—

DOTOI	...	...	4 Companies of Infantry.
DATTA KHEL	...	{	1 Squadron Cavalry.
			1 Mountain Battery.
			2 Battalions Infantry.

The section of the Line of Communications from 5 miles west of PIYADIN to 10 miles east of DATTA KHEL is under the command of Colonel X whose Head-quarters are at DATTA KHEL. The inhabitants of the surrounding country are frontier tribesmen, fairly well armed with modern rifles.

SPECIAL IDEA.

At 6 P.M. on the 1st December Colonel X receives information from native spies that hostile tribesmen are assembling near GURBAZ with a view to a raid on the Line of Communications. The numbers are vaguely given at about 5,000.

REQUIRED.

1. Appreciation of the situation.
2. All necessary orders.

APPRECIATION OF THE SITUATION.

Colonel X has two courses open to him :—

- I.—To move the bulk of his force on the night of the 1-2nd December to a central point on the Line of Communications at or near DOTOI, and there await developments ;
or
- II.—To adopt the bold policy of at once searching out the enemy at GURBAZ, where he has been located, and attack him before he has time to put his plans into execution.

The 1st course has this disadvantage that it will be almost impossible to entirely prevent the raid; for Colonel X is unlikely to receive intelligence of the enemy's intentions in time to prevent the raiders from carrying out some part of their programme.

It is probable that the enemy's plans will only take definite shape after they have assembled and are ready to act, and that their decision will be followed by immediate action. A collection of tribesmen can move across country independent of roads, and the distances they can cover at a stretch, and the pace at which they move, will be much greater than what Colonel X's troops are capable of doing.

So Colonel X can only hope to afford aid to the part of the section attacked in time to prevent the raiders from doing serious damage, and his chance of inflicting loss on the enemy is small, as they will withdraw and disperse on the first sign of strong reinforcements approaching.

An even-partially successful raid will encourage the tribesmen to further efforts of a similar nature, so if Colonel X adopts this mode of action, he may look forward to a harassing time.

The 2nd course, on the other hand, promises every chance of success and should result in Colonel X inflicting severe loss upon the enemy, and striking terror among the hostile tribesmen, in which case he, Colonel X, may hope to be left alone for some time to come.

The information leads to the conclusion that the tribesmen will not be ready to do anything for at least 24 hours, and as they will little expect to be attacked at such a distance from DATTA KHEL, the attack should have all the elements of surprise, if Colonel X makes his plans well. It is essential for success that he should observe the utmost secrecy in his arrangements.

Colonel X determines on the second course after satisfying himself that the operation is practicable. For he finds on studying the map that a hill road, passable by the various arms under his command runs direct to GURBAZ, *via* YOWA TSERAI, and lends itself to concealed movement, as there are no villages along the road or in the proximity, and he may hope to make the march by night undiscovered. The distance by road is eight miles to YOWA TSERAI (the last mile being a bit steep) and nine miles on to GURBAZ, or seven miles to a position on the hill MANAI NARAI, overlooking the village. He has thirteen hours of darkness before him, and allowing for about two hours for the men to have their food before starting, he will be able to move at 8 P.M. This should allow of his getting to YOWA TSERAI before midnight, and he can then give his men and animals five hours' rest before moving on against GURBAZ. By moving off again at 5 A.M., Colonel X may hope to be in position to attack the village by 8 A.M., an hour by which, in the winter in those districts, villagers have hardly begun to move about.

The hill MANAI NARAI offers a fine position for the mountain guns, which in addition to commanding the hostile place of assembly is within easy range of the WARSAKAI Pass, by which the tribesmen may endeavour to retreat.

The ground E. and S.-E. of GURBAZ offers field for action by the cavalry should opportunity occur, so Colonel X decides to take the cavalry with him.

The hill 9056, W. of YOWA TSERAI, offers a good signalling station through which to keep up communication with DATTA KHEL.

For his actual plan of attack on the village, Colonel X must wait, till he gets on the ground, where he will be guided by circumstances.

For his withdrawal from GURBAZ, the country offers three lines of retirement, one the way he came, the other by the SHAWAL TANGI to the road DOTOI-DATTA KHEL, and the third *via* the WARSAKAI Pass by the road to DOTOI. If highly successful in his attack, he will very likely choose the last with a view to overawing the hostile villages *en route*, but this is a matter which will be decided when the time comes.

ORDERS.

To ensure success, secrecy in the arrangements is all important, so Colonel X only takes into his immediate confidence his Staff Officer, the O. C. Advanced Guard, and Officers Commanding Units, to whom he issues secret orders, and he issues orders to the troops with a view to concealing his intentions as follows:—

Orders by Colonel X, Commanding No. 2 Section, Line of Communications.

DATTA KHEL :
1st December 1906.

No. 19.

- | | |
|---|---|
| <p>Advanced Guard—
Major Y.
4 Cos No. 1 Battalion.
Main Body (in order of
march).—
No. 2 Battalion Mountain Battery.
1 section of Field Hospital.
Squadron of Cavalry
(less 1 section).</p> | <p>1. A column, strength as per margin, will march this evening to DOTOI.
2. The Advanced Guard will start from the N.-W. gate of the fort at 8 P.M.
3. The Main Body will follow the Advanced Guard at 200 yards' distance.
4. No baggage will accompany the column
5. The Commanding Officer will march at the head of the Main Body.</p> |
|---|---|

X, Colonel.

Dictated to Officers Commanding Units at 6-20 P.M.

Additional Secret Orders by Colonel X, Commanding No. 2 Section, Line of Communications.

DATTA KHEL :
1st December 1906.

No. 20.

1. Reliable information has been received that tribesmen are collecting at GURBAZ, with a view to raiding this section of the Line of Communications.

2. I intend to move against GURBAZ and attack the enemy.
3. The column, as per order No. 19 issued to the troops, will leave DATTA KHEL, as though marching for DOTOI, at the time appointed.
4. The O. C. Advanced Guard will change the direction of his march on reaching the path which crosses the road in a southerly direction $1\frac{1}{2}$ miles from this post. From this point he will march along the path to YOWA TSERAI, and on arrival there will provide for the security of the Main Body, which will halt at YOWA TSERAI, till 5 A.M. to-morrow, the 2nd instant.
5. The Staff Officer will proceed with the O. C. Advanced Guard to the place $1\frac{1}{2}$ miles from this post, where the road deviates, and he will remain at that point till the whole column has passed, and then will rejoin the O. C. Column.

X, *Colonel.*

Communicated verbally to O. C.'s Units and O. C. Advanced Guard at 6-15 P.M.

The order to move from YOWA TSERAI at 5 A.M. on the 2nd December 1906 in the same order of march will be issued to units immediately on arrival at the halting place near YOWA TSERAI.

So too the order to O. C. No. 2 Battalion to provide for a signalling station on hill 9056.

Orders will also be given to O. C. No. 1 Battalion, who will be left at DATTA KHEL with 4 companies of his battalion and 1 section of cavalry, to make all necessary arrangements for the security of the post, and to get into signalling communication with the station on hill 9056 as early as possible on the 2nd December.

REMARKS BY ADJUDICATING OFFICER.

Thirteen solutions of the problem were received; some of these were nearly equal in merit. That sent in by "Nunquam non Paratus" is considered to be the best on the whole, although there are some minor points in it which are open to criticism and in which it is inferior to other solutions; for instance, there is nothing in the information to warrant the conclusion that the enemy will remain quiescent for 24 hours. Moving cavalry over mountain paths at night would be a hazardous operation. There would not be much rest for the men on account of the cold. There is no provision made for the possibility of being out for at least two days.

A vigorous offensive would appear to be the best method of dealing with the problem in question. If the enemy can be dealt a severe blow, he will not trouble the communications for some time to come, whereas, if a defensive attitude is taken up, the enemy can attack where and when he pleases, and, if unsuccessful, can withdraw before he has sustained any appreciable loss and try again another day.

In the appreciations there was a tendency to anticipate a certain course of action by the enemy. Conclusions were arrived at and

arguments built up for them afterwards. The writers appear to have been carried away by one idea and all possible courses were not sufficiently considered. Several competitors concentrated their attention on convoys, and thought the *defeat* of the enemy to be a minor consideration; others made plans for repulsing him, but few considered the possibility of attack.

One solution commenced with a page and a half of assumptions which were quite unnecessary; the writer then went on to utilise more troops than were placed at his disposal.

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TACTICAL SCHEME COMPETITION, OCTOBER 1907.

References to map which will be supplied on demand.

GENERAL IDEA.

1. The BINA river is the boundary line dividing Eastern and Western States between whom war is declared on the 1st July 1901.
2. The country is INDIA. The BINA and BABNAI rivers are unfordable owing to the rains.
3. The SAUGOR branch, I.M.R., and the I.M.R. are strategical railways, running in rear of the respective frontiers.
4. A neutral State is situated south of the map, east of the BABNAI river.

SPECIAL IDEA.

You are placed in command of the force noted in the margin which commences detraining at BAGRU station on the 2nd July in the marginal order. The whole force will have reached BAGRU by midday on the 4th JULY.

1 Cavalry Brigade.
1 Division Infantry.
1 Battery of 5" B.L. Howitzers.
All on Indian Establishment.

On the morning of the 3rd July, you receive the following instructions:—

1. An Eastern force, estimated at 2 to 3 divisions, is concentrating at MANAK CHOUK on the SAUGOR branch, I.M.R., 25 miles east of BARODEA BRAHMIN.
2. The main Western army will assume the offensive, marching due east, as soon as its concentration is completed at MANGOULI, 50 miles north of KULHAR station.
3. Your force will hold the enemy in check, should an attempt be made to force the frontier south of BISRAI.

REQUIRED.

1. Write an appreciation of the situation, such as the O.S.O. of the Western detached force would write for the O.C.
2. Orders for the final action decided on.
3. Distribution of the troops on the 8th July. To elucidate your dispositions, please mark them clearly on the map, which should be returned.

The opposing cavalry have been in touch since the 4th July along the frontier, but the enemy's infantry have not shown up west of the TORA ridge.

NOTE.—Please consider all roads represented on the map by double or single lines as metalled cart roads.

Intending competitors should forward their names to the Secretary of the Institution, together with the sum of Re. 1, when they will receive a copy of the map to which the scheme relates together with all instructions.

This competition will close on 1st March 1908. Solutions received after that date will be treated as "LATE" for adjudication.

UNIVERSITY OF MICHIGAN
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2. I intend to move against GURBAZ and attack the enemy.
3. The column, as per order No. 19 issued to the troops, will leave DATTA KHEL, as though marching for DOTOI, at the time appointed.
4. The O. C. Advanced Guard will change the direction of his march on reaching the path which crosses the road in a southerly direction $1\frac{1}{2}$ miles from this post. From this point he will march along the path to YOWA TSERAI, and on arrival there will provide for the security of the Main Body, which will halt at YOWA TSERAI, till 5 A.M. to-morrow, the 2nd instant.
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